TECHNOLOGY DEPARTMENT

ANNUAL REVIEW AND REFERENCE NUMBER

A National Newspaper for Every Branch of the Industry

Automotive Daily News

★CARS★ SHOP EQUIPMENT TRUCKS ★★AVIATION★★ PARTS ACCESSORIES ★TIRES★

Vol. 12. No. 1543 | Entered as second-class matter Aug. 27, 1925, Post Office, N. Y., N. Y., Under Act of March 3, 1879 | NEW YORK, THURSDAY, AUGUST 27, 1931 | 5 Cents, $12 Per Year

Stewart Corp. Announces New 8 in Line 3-Ton Chassis For Long Distance Hauling

Latest Model Has Standard Wheel Base of 170 Inches, With Special Wheel Bases Available; Priced at $2.990 f.o.b. Buffalo

BUFFALO, N. Y., Aug. 26.—The Stewart Motor Corporation of Buffalo announces today the production of a new eight in line three-ton chassis at a price of $2,990 known as Model 48-8.

This new eight was designed for long distance moving, hauling and all types of work demanding high speeds combined with great power and stamina.

The engine is an eight in line L head type, bore 3¾ inches by 4¾ inches, developing 130 b. h. p. Standard wheelbase 170 inches, special wheelbases 150, 160, 196, 226, and 241 inches.

Bendix mechanical four wheel brakes with booster spiral bevel full floating rear axle; 8.25-20 balloon tires, duals rear; chassis weight 6,500 pounds.

FAULKNER REVIEWS PROGRESS MADE BY AUBURN IN 1931

Auburn, Ind., Aug. 26. — Roy Faulkner, president of the Auburn Automobile Company, today summarized the progress achieved by his company during 1931. "In the first seven months of the calendar year," said Mr. Faulkner, "Auburn shipped 16,549 more cars than for the entire year 1930 and 7,673 more than for all of 1929, the company's previous peak year period. Every month has shown a very marked gain over the corresponding month of last year.

"In brief Auburn sales are up 155 per cent.

"More than 700 new dealers have joined Auburn's ranks so far this year. At the same time the number of cars per dealer has more than doubled. Auburn registration position various parts of the country has jumped from seventeenth, eighteenth and nineteenth places a year ago to third, fourth, fifth, sixth and seventh positions today."

HUPMOBILE CALLS DISTRICT CHIEFS TO DISCUSS 1932 PLANS

Detroit, Mich., Aug. 26.—Detroit district sales managers of Hupmobile are to be in conference here all day Thursday and Friday of this week. This is the first combined get-together of 1931.

Plans will be formulated for dealer organization. Sales, service and advertising are to be discussed. Among the speakers will be R. S. Cole, vice-president in charge of sales; I. M. Kauffelt, assistant sales manager; C. E. Salisbury, director of service, and F. W. Munro, head of the Hupmobile advertising department.

RAYBESTOS ADVERTISING TO LOUIS C. PEDLAR CORP.

New York, Aug. 26.—The Raybestos Company, Bridgeport, Conn., one of the largest manufacturers of brake lining in the world, will have its advertising handled by the Louis C. Pedlar Corporation, according to a statement from the factory today.

Trend to Bright Colors Seen by Duco Service

Detroit, Aug. 26.—Black continues the steady, moderate decline commenced last June, according to the monthly report of Duco. The excessive use of black in automobile production during 1930 and 1931 has destroyed what little distinction remained for this finish, the report says.

"The color trend at the present time in the automobile industry appears to be in the direction of light, bright colors as forecast in the July release of the Automobile Color Index," reads the statement. "Distinction is the vogue of the day for motor car colors and black no longer provides that attribute. The new car buyer wants the world to know that his car is new and demands the latest colors to help achieve this end. The monotony of color sameness caused by a year's production in depression black has caused many car manufacturers to lead the way against sales inertia by resorting to gay colors of beaming brightness.

"Blue records a dip in its movement for this month. Dark blues have suffered somewhat from the same reaction accorded black, although interest in Washington blue and state blue appears well sustained for the present. Aside from the withdrawal of Goeblin blue from prominence and the addition of median clear Byram blue to the list that constitutes the blues of cur-

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Automotive Daily News Finds August Output About 180,000

NEW YORK, Aug. 26.—A wire check-up by Automotive Daily News on August production by the industry places the total number of vehicle units turned out at approximately 180,000. August has been a difficult month on which to form an exact estimate because of the number of plants that have had vacation periods and the slowing down in others preparatory to beginning work on parts for the new lines.

The Ford plant in Detroit has been on a reduced production schedule, as was announced in this paper some weeks ago. It is always difficult to get close figures on Ford production, even at the end of the month, because of the widely scattered assembly plants, a condition that delays receipt of totals at the home office. Ford assembly plants have been operating some at reduced schedules and others on more or less full time, according to demand in the various territories.

Still allowing for factors of error that are inevitable, in estimates based on what is really three weeks' production, the total of 180,000 is considered fairly in line with actual operations.

Our estimate of 180,000 vehicle units in August, 1931, compared with an actual output of 232,838 units in August, 1930. This latter figure is the official revision by the Department of Commerce. In July of this year the National Automobile Chamber of Commerce has estimated that the industry turned out 221,485 vehicle units, the Department of Commerce not yet having announced the final revision of the total.

Using the Automotive Daily News estimate of 180,000 vehicle units for August and the National Automobile Chamber of Commerce total of 221,485 for July this year, we get a total production for the first eight months of 1931 of 2,032,933. The Department of Commerce revised total for the first eight months of 1930 was 2,835,622 units. The difference here is just about in keeping with the decrease in production that has been shown all through 1931.

8,000,000TH CHEVROLET LEAVES FLINT LINE; IS 2,845,938TH SIX

Flint, Mich., Aug. 26.—An antidote for talk of depressions and seasonal stagnation in the automobile industry was uncovered here when the Chevrolet Motor Company turned out its 8,000,000th car in its less than twenty years of existence.

The "mile-stone" car came off the line of the local assembly plant shortly before noon yesterday and brings the number of six cylinder cars built by this manufacturer, since the introduction of the larger type in 1929, to nearly 3,000,000. Five million cars and trucks have been built in less than five years.

No ceremonies attended the building of the car—a sport roadster—other than the momentary pause of workmen who watched it gradually take a finished form as it passed down the assembly line. C. E. Wotherald, newly appointed general manufacturing manager, had the car brought to Detroit for exhibition to other company officials. Among those on hand to inspect it were W. S. Knudsen, president and general manager; H. J. Klingler, vice-president and general sales

(Continued on Page 9)

GRIBBEN TAKES OVER AUBURN DISTRIBUTION FOR NORTHERN N. J.

New York, Aug. 26.—A. R. Gribben, president of the Auburn Sales Company, Inc., metropolitan distributors of Auburn and Cord, has announced that effective September 1 Auburn and Cord cars will be distributed through the entire Northern New Jersey territory by his company.

The Lawrence Motor Car Company, E Lorentowicz, president, who has been an associate distributor of the New York company handling the distribution in Essex, Union, Somerset and Morris counties, will continue to handle retail sales of Auburn and Cord cars from its present location, 390 Halsey St., Newark.

Diamond T Adds New 2 Ton Model On 3 Wheelbases Priced $1,095 Up

CHICAGO, Ill.—A new two-ton truck chassis, offered in three-wheel base lengths, 155 inches, standard, 167 inches and 137 inches, at a base price of $1,095, is announced by the Diamond T Motor Car Company. The manufacturers point to the fact that the chassis is a heavy-duty unit with a chassis weight of over 4,000 pounds.

Features of the design are a tapered steel frame with cross members of the alligator jaw type, full floating rear axle, four-speed transmission with full involute teeth on the constant mesh, and third-speed gears, cam and lever steering with front springs shackled in front.

This new model is powered by the Diamond T Hercules JXB, six-cylinder truck engine, with a bore and stroke of 3⅝ inches by 4¼ inches. Piston displacement is 263 cubic inches and upwards of 65 horse power is developed at 2,400 r. p. m. Rubber mounting is employed for the motor, which is of the L-head type, with cylinder block and upper crank case cast in one piece.

According to C. A. Peirce, chief engineer, this engine represents a decided advance in design and is featured by clean combustion, resulting from the use of down-draft carburetion and the design of the intake manifolding. Unusual care in designing has permitted a reduction of approximately 20 per cent, in the number of engine parts, as compared with common practice, in addition to providing unusual accessibility to all parts of the

(Continued on Page 38)

PRESIDENTS SEE INDUSTRY SET FOR REVIVAL IN 1932

NEW YORK, Aug. 26.—In a survey of the presidents of a number of leading car and truck manufacturers, Automotive Daily News finds that most of the executives hold the opinion that business will continue quiet during the remainder of 1931. They think that there may be a slight upward tendency due to crop movement and other seasonal conditions to bring some sales revival later in the fall, but all are obviously hoping better things for 1932. The following are some of the opinions expressed:

By L. A. MILLER
President Willys-Overland Company

While automobile sales will be very limited during the remainder of this year, I think the total for the last six months may exceed the same period of last year. There is likely to be an improvement in sales in September and October due to rural buying, but it will not be great, in my opinion. It seems to me that 1932 should show a decided upturn in automobile business, but after two years of depression one is apt not to see the bright factors or to discount them in attempting to prophesy.

By E. S. GORRELL
President Stutz Motor Car Company

It is my opinion that business over the next few months will remain extremely quiet in the automotive in-

(Continued on page 16)

Servicing the Ignition System

By J. A. SHANK
Service Manager The Electric Auto-Lite Company

With the advent of the present-day multi-cylinder, high-compression, high-speed engine, it is extremely important that the ignition system be given regular, periodical inspection and tune up to keep the engine running efficiently. This is even more important with the tendency toward three and four lobe cam distributors for firing the six and eight cylinder engines.

The thorough and complete knowledge of the various distributors which is required, as well as the necessity for having proper testing apparatus for checking condensers and ignition coils, is making this work more and more that of a specialist. The official service stations of the various equipment manufacturers realize the importance of this work and are making specialists of one or two of their men in order to provide efficient service.

The first step in servicing not only distributors but any of the electrical units is to see that they are thoroughly cleaned and then all parts checked for excessive wear. Drive-shaft bearings showing even a slight amount of wear should be replaced, while breaker points which are burnt or badly pitted should also be replaced. If breaker points show only a slight amount of burning they can be redressed by using some of the resurfacing tools which are now on the market or by careful work with a carborundum stone. Breaker cams must be checked for uneven wear on the lobes and replaced if worn unevenly over .003 inch or .004 inch. All electrical connections in the ignition system must be carefully checked not only to see that they are mechanically tight but making good electrical contact. This checking of the electrical connections includes the wiring, as well as the actual connections on the distributor and coil units.

Having placed the units in perfect mechanical condition, the next step is proper adjustment and synchronizing of the breaker points. Breaker points must have a flat, even contact with each other and be set for the maximum gap specified by the manufacturer. After the

(Continued on Page 34)

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Flexible All-Metal Hose and Metal Tubing

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SEE CANADIAN FORD NET OFF FOR YEAR

Montreal, Aug. 26.—Discussing Ford Motor Company of Canada, Standard Statistics says: "During the first six months of 1931, this company suffered a sharp reduction in its domestic sales. Registrations of its cars in the Maritime Province, Ontario and Quebec totaled 10,584, as compared with 17,040 cars in the like 1930 period, a decline of some 38 per cent.

"As in the United States, Chevrolet has displaced Ford from first place in these districts of Canada, with sales above those of the like 1930 period. Since depressed conditions are unlikely soon to be materially bettered in the western provinces of Canada or in Ford's important export markets, there seems little probability of an early improvement in earnings.

"No interim reports are published, but it is doubtful that the $1.20 annual dividend will be covered this year."

DOEHLER DIE CASTING INCREASING SCHEDULES

Batavia, N. Y., Aug. 26.—The local plant of the Doehler Die Casting Corporation, manufacturer of aluminum and brass castings, has steadily increased its production schedules and working sheets from month to month this year in line with a recent announcement by H. H. Doehler, president, that an ambitious manufacturing program for the local plant had been mapped out for the year 1931.

Employment during the first quarter this year was approximately 250 men, whereas the total has been more than doubled in the past four months. A substantial further increase in output and employment is foreseen before the end of the current year.

WESTON GLASS TO RESUME FULL TIME

Weston, W. Va., Aug. 26.—The plant of the Weston Glass Company, Inc., idle for several months, will resume full time production schedules September 14, giving steady employment to approximately 250 workers.

SPARKS from DETROIT

A. D. N.'s Birthday
* * *
More New Roads
* * *
That Court Decision
* * *
Engineering Records
* * *

Chris Sinsabaugh—Detroit Editor

AS we light the six candles on A. D. N.'s birthday cake today we look back over the years and make comparisons between now and 1925. It must be confessed, however, that comparisons are odious. Apparently the industry has stood still; in fact, it has slipped considerably because of the depression. Whereas we had hoped to be able to point with pride to the progress made, we have to make excuses for the slippage.

Still, the truth never hurts, so perhaps you won't mind having it called to your attention that 1931 production is going to be far below that of 1925. In 1925 there were 3,870,744 passenger cars and 557,056 trucks turned out—a total of 4,427,800, valued at $3,015,163,562. This year is not ended as yet, so the best we can do is to quote 1930, which produced 2,910,187 pasenger cars and 599,991 trucks, valued at $2,128,792,145. It is admitted that 1931 hardly will top those figures. Taking into account parts and accessories also, the combined industry's products were valued at $4,210,174,963 in 1925 and $3,330,775,532 in 1930.

* * *

THAT'S red ink, so to speak. Now for the other side of the ledger, which shows that whereas in 1925 there were 24,564,574 motor vehicles registered, in 1930 this had increased to 35,603,000. In this country we have gained many miles of new roads, all of which is most beneficial to the automobile industry. We had at the end of 1930 700,000 miles of surfaced roads as against 495,000 in 1925.

Cheerful bit of news, this about motor vehicle taxes. They show a wonderful increase over 1925. In that year the motorists paid $664,273,492 and last year this had jumped to $1,000,388,270. Somebody is doing business.

* * *

DEALERS who have been embarrassed by "sore" motorists belittling the cars they own because of fancied grievances or dissatisfaction over the way the vehicles perform will read with interest the decision just handed down by Federal Judge Simons in Detroit

A car owner had bedecked his car with lemons and was driving it around the streets, which caused the manufacturer to appeal to the courts. Being a Delaware corporation, the case of course came up in the Federal Court.

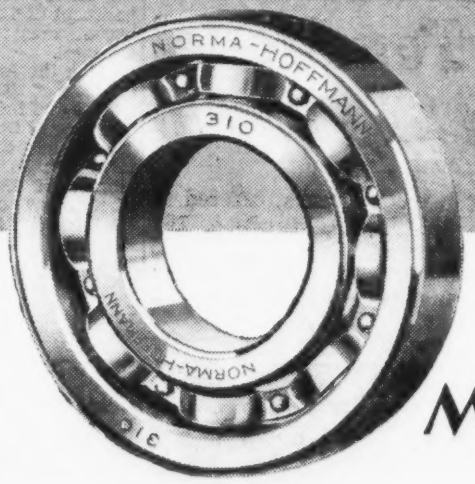
The owner contended that he could do as he liked with his own property, but it was Judge Simons' ruling that mud could not be thrown in this manner—that while the car was personal property, the owner could not do anything with it that would damage the reputation or destroy the good will of the company making the automobile.

* * *

BUICK has been delving into its engineering records to find just how many miles the straight 8 models were driven before they went into production. This research discloses four and a quarter million miles—117 times around the world, or the ordinary yearly driving of 42,450 car owners. Each major unit was driven distances running into six figures before it was accepted and then the assembled cars containing these units were tested for further hundreds of thousands of miles, the exact total being 4,245,103 miles. The syncro-mesh transmission was driven 467,231 before it got the okay and the engines 392,231 miles.

SANDERS MOTOR SELLS 40 TRUCKS, 35 CARS, ONE ORDER

Raleigh, N. C., Aug. 26.—Director Brower of the state division of purchase and contract announces that the Sanders Motor Company of Raleigh was the successful bidder for forty one and one-half ton trucks with cabs. Their bid was $515.85. The contract for thirty Ford coupes and five Ford coaches also went to the Sanders concern on a bid of $482.62 and $466.62.



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PRECISION BEARINGS
BALL, ROLLER AND THRUST

NORMA-HOFFMANN BEARINGS CORPN.-STAMFORD CONN. U.S.A.

Sales Chiefs Report Dealers In Stronger Position

Lower Inventories and More Closely Knit Organizations Result From Retrenchment

NEW YORK, Aug. 26.—Automotive Daily News is pleased to present an up-to-the-minute survey of the leading sales managers in the industry, covering their views on the present condition of the dealer body. Have dealers generally put their business operations on a sounder basis to meet the conditions of depression? Has dealer liquidation been about completed? These and other questions were asked the sales executives. The following replies contain much of real interest to factory men and merchants alike:

DEALERS HAVE SHOWN FIGHTING SPIRIT

By C. W. CHURCHILL,
General Sales Manager Buick Motor Car Company

Our frank opinion is that dealers have put their business operations on a better basis than in the past. When a man reaches a crisis in economic affairs he studies more thoroughly every ramification of his business, he reviews every item of expense, he appraises each factor which contributes to gross income. If he is keen, naturally he makes certain that the total expense is trimmed, so that it is less than the gross income.

Among successful dealers these operations automatically follow during a depressed state of business, and, incidentally, many dealers study operations thoroughly for the first time when they reach the particular phase of the business cycle through which we have been passing.

Have dealers, with a less volume of sales, managed through efficiency and wise economy to hold their own?

This question, of course, to a degree is general. Not all dealers have been successful in staying in the picture. The better dealers throughout the industry, of course, have so directed their operations that with a less volume of sales and greater efficiency and wise economies they are on a sound basis and are in position to forge ahead. The inefficient ones are automatically eliminated in any period of stress.

It is our opinion that the dealer body as a whole is to be congratulated on the fighting spirit manifested. A current visit among Buick dealers proves that the mental attitude is fine, and they look forward to 1932-1933 with a sane degree of optimism.

It is a great mistake to be a "bear" on the automobile industry. Gasoline sales prove conclusively that cars are running everywhere, and this naturally means that cars are wearing out. A replacement market lies ahead.

The automobile is so thoroughly woven into the social fabric of our country that we need have little worry as to whether or not motor cars will be used. Of course they will be used, and many families will have two cars—some will have more.

DEALER LIQUIDATION HAS REACHED END

By R. H. MULCH,
General Sales Manager De Vaux-Hall Motors Corporation

In reply to your letter of August 5, there is no question that a large number of dealers have taken time by the forelock and have "put their house in order" during the last eighteen months. Those who have had the vision and foresight to gauge economic conditions realized that the deflation which started a little over eighteen months ago was not a seasonable decline in the motor car business. These men have had to take drastic steps in cutting down their overhead.

You appreciate, however, during

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Service Work Filling Gap In Slow Sales Period, Factory Chiefs Find

Some Dealers Still Hold Off, While Others Cross Swords With Super Service Stations

New York, Aug. 26.—To ascertain whether automobile dealers and truck dealers, during this year of depression, have tried to develop service profits as they obviously should, Automotive Daily News recently asked some leading service executives to give their opinions based on the experiences of 1931, in their organizations. We are glad to publish these opinions here:

By L. R. HODGE
Assistant Service Manager Franklin Automobile Company

Our dealer organizations with the advent of super-service stations have given a great deal of extra study to explore all sources of income in servicing owners' cars. In order to compete with this service, dealers have found it necessary to further equip their service stations with time-saving devices to better enable them to give the same service as can be obtained through the highly specialized grease and oil stations.

Dealers entering this competitive field in 1931 have been successful in showing a nice return on their service sales. Reports from our Pacific Coast dealers particularly have shown an increase in their net profit on total sales over the previous year.

Each new car owner has a certain potential volume of work on which the service department can expect

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A. E. R. A. ISSUES

Sept. 26, 28, 29, 30, October 1, 2 and 8

On the occasion of the A. E. R. A. Convention and Exhibit to be held in Atlantic City, Automotive Daily News will distribute copies to those in attendance and will also mail copies daily to bus operators, truck fleet owners and truck dealers throughout the country. The convention will be covered daily by our own reporters so that all the news of the A. E. R. A. will be in the hands of the trade as quickly as possible.

Manufacturers of trucks, buses, vehicle equipment, shop equipment, etc., should find the added distribution very profitable.

Regular rates apply.

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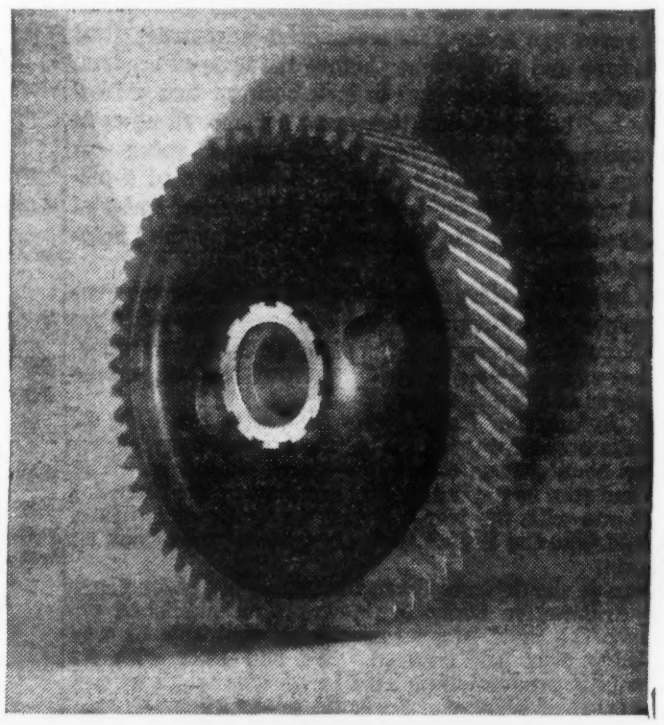

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Our Birthday

WITH this annual review and reference number, the Automotive Daily News also celebrates its sixth birthday. Six years ago today this automotive newspaper first spread its type and white paper before the eyes of readers.

It is extremely interesting to look back on that primal issue. We had been told that there was not enough news in the automotive industry to keep a daily paper going. A month or so after we started publication we printed a picture of the news editor's desk, showing the mass of material that had been received, but not used, on the day the photograph was taken.

News in this industry varies, even as it does in the general newspaper field, but there never has been a day when we could not have filled more than the eight, or twelve, or whatever number of pages that we used to present the happenings in all branches of the automotive field.

When Automotive Daily News first saw the light of print, if we may so express it, the last major slump or depression in this country was about four years behind us. The year 1921 had seen us paying heavily for some of the financial sins that came with the war. It was freely predicted then that it would take the United States ten years to get back on its feet again.

Perhaps it should have taken ten years, but three years after the Automotive Daily News was first published we plunged into the most prosperous period that this or any other country ever had enjoyed. We had 1928 with its record-breaking production and 1929 with what shall we call it? Our period of industrial dementia praecox?

And now we are at the bottom of the longest and severest depression in modern industrial history, but we have at any rate learned to look up hopefully at the daylight above us.

If the career so far of the Automotive Daily News has been brief compared with that of the London Times, say, it has been exciting. We have lived through sunshine and storm and perhaps this occasion of our birthday celebration is a good time to assure our readers that they have only to exercise patience and elbow grease to see our great industry come out of the doldrums into the trade winds that will blow us to a prosperity beyond anything that we have hirtherto enjoyed. And that goes even for the somewhat false and spacious prosperity of 1929.

A Satisfied Dealer?

IN our morning's mail arrived a letter from a dealer with a grievance. His grievance was against a customer, who wanted some service to which he was not entirely entitled, according to the letter of the law.

One paragraph of this letter reads: "He told me that if I wouldn't meet his demand in the matter I would have a dissatisfied customer on my hands. And I told him that if I did meet his demands I would have a dissatisfied dealer on my hands, and that as I had to see more of the dealer than I did of the customer, I would rather have him dissatisfied than myself."

Obviously it would not be cricket to go into the entire transaction here. The dealer was standing on the literal interpretation of the contract. He was justified legally in refusing to meet his customer's demand.

The money involved was about $100. The customer feels that our dealer friend has deliberately cheated him out of $100. This is not true, but the buyer will never be pursuaded otherwise. We have a sneaking suspicion that this particular dealer would have found that $100 by no means a bad investment. He might even have compromised on splitting the difference. At any rate, he could have placated his "dissatisfied dealer" quicker than he ever will his enraged customer.

COMING EVENTS

AUGUST

31-Sept. 4—**Buffalo, N. Y.** American Chemical ociety, meeting.

SEPTEMBER

1- 3—**Cleveland, O.** Hotel Statler, Society of Automotive Engineers, twentieth annual aeronautical meeting in conjunction with National Air Races.

7- 9—**Kansas City, Mo.** American Society of Mechanical Engineers, general meeting.

8-17—**Utrecht, Holland.** Utrecht Fair, bus and truck show.

9-10—**Toronto, Can.** National Association of Show Managers, convention.

11—**Charleston, W. Va.** West Virginia Motor Transport Association, meeting.

16-17—**Atlantic City, N. J.** National Petroleum Association, annual meeting. Hotel Traymore.

17—**Chicago, Ill.** Steel Founders Society, convention.

20-26—**Springfield, Mass.** Eastern States Exposition.

21-25—**Boston, Mass.** American Welding Society, meeting. The following societies will participate: American Society for Steel Treating, American Welding Society, Iron and Steel Division, A. S. M. E.; Machine Shop Practice Division, A. S. M. E.; Iron and Steel Division, A. I. M. E.; Institute of Metals, A. I. M. E.

28-29—**Atlantic City, N. J.** National Association of Motor Bus Operators, fifth annual meeting, Hotel Ambassador.

26-Oct. 2—**Atlantic City, N. J.** American Electric Railway Association, annual meeting.

OCTOBER

1-11—**Paris, France.** International Automobile Salon.

2- 3—**Houston, Tex.** American Institute of Mining and Metallurgical Engineers, petroleum division meeting.

7- 8—**Detroit, Mich.** Society of Automotive Engineers, national production meeting.

12-13—**Pittsburgh, Pa.** Pennsylvania Automotive Trades Association, convention.

12-16—**Chicago, Ill.** National Safety Council.

14-16—**Pittsburgh, Pa.** Society of Industrial Engineers, convention.

14-15—**Albany, N. Y.** New York Automobile Dealers Association, convention.

15-17—**Pittsburgh, Pa.** American Gear Manufacturers Association, convention.

15-24—**London, England.** International Motor Exhibition, Olympia Hall.

19-22—**Chicago, Ill.** National Hardware Association, convention.

22-28—**Prague, Czecho-Slovakia.** International Automobile Exposition.

22-28—**Prague, Czecho-Slovakia.** International Automobile Exposition.

23—**New York City.** American Iron and Steel Institute, convention.

27-28—**Chicago, Ill.** American Railway Association, Motor Transport Division, meeting.

NOVEMBER

Copenhagen, Denmark., Motorcycle, truck and bus exposition.

5-14—**London, England.** International Commercial Motor Transport Exhibition, Olympia Hall.

10-12—**Chicago, Ill.** American Petroleum Institute, annual meeting, Hotel Stevens.

26-Dec. 6—**Paris, France.** International Automobile Salon. (Commercial vehicles and accessories.)

28-Dec. 9—**Brussels, Belgium.** Automobile Salon.

30-Dec. 4—**New York City.** American Society of Mechanical Engineers, annual meeting.

DECEMBER

7-12—**Atlantic City, N. J.** Motor and Equipment Association and National Standard Parts Association, Joint Trade Show.

9-11—**Atlantic City, N. J.** American Institute of Chemical Engineers, meeting.

JANUARY

11-14—**Detroit, Mich.** American Road Builders Association, twenty-ninth convention and show.

9-16—**New York City.** National Automobile Chamber of Commerce, National Automobile Show.

30-Feb. 6—**Chicago, Ill.** National Automobile Chamber of Commerce, National Automobile Show.

Differential Discussions

Urges Factory Intervention To Control Used Car Trades

Editor, Automotive Daily News: As a reader of your paper since its first day of publication, which I bileve was six or seven years ago, perhaps you may grant me space to raise my voice in the chorus of dealer opinions that you have recently been publishing. I do so anonymously, because my own relations with my factory have been fairly satisfactory and I don't want to have it appear that I am criticizing my own factory alone when I make reflections on the part that manufacturers have played in spoiling what should have been one of the best businesses in the retail field. If automobile merchandising is in any such position today, a lot of dealers are being fooled. It reminds me of the story of the man who came back to his home town and asked about an old friend, and they told him he had died. Startled, the man said: "What, old Jim can't be dead?" "Well," was the answer, "if he ain't, they've played a turrible dirty trick on him. They buried him last Saturday."

In my opinion the whole trouble in the automobile business dates back to the time when the retail end was in swaddling clothes. Automobile dealers then, and I was one of them, were tickled silly to take in used cars. They had a line of customers waiting for every used car that came into their plants. They offered big trade values, sure they did, but they turned right around and sold the used cars for even more than they paid for them. In that way the automobile dealers got stuck with the used car end of the business. People expected them to take in the old cars, and, if they wouldn't, the customers went somewhere else to buy the new ones. No other business ever stuck itself with a problem like that. You don't expect your tailor to swap in your old suit, and, at that, sometimes, old suits might be better than junker cars. You don't try to swap a furniture dealer your old bed. Yon don't even try to trade your old icebox for cash and a new electric. But the poor car dealer. Any old piece of walking junk comes into his shop and he has got to take it and like it or he loses a new car sale.

Automobile dealers didn't deliberately go out to create the used car problem. It just grew with the business until now it comes pretty close to being the business. If there weren't any used cars, pretty nearly every dealer in the country could make a living.

But where I do blame the automobile manufacturers is for intensifying the used car problem. It was bad enough before, but when the manufacturers started pouring more cars on our back than we could get rid of, then we reached the crisis. I don't know how many automobile dealers have gone out of business since 1929, but I bet the figure would startle a lot of people. Furthermore, I wonder how many would be left today, if the real bankrupts were weeded out? Not so many as you might think.

However, whoever started the used car evil, there isn't a doubt that the makers doubled it back in 1928 and 1929, when they poured out more cars than we could possibly sell on any reasonable basis. We, the dealers, may have been the originators of the evil, but the factories brought it to the critical stage.

I have watched a dozer schemes tried out for curing the used car trouble. The idea of a central buying and selling mart has been tried. You can't get a lot of individual dealers to give full adhesion to such a plan, and the result is that before you know it they are back cutting and slashing the same as before,

(Continued on Page 27)

WILLYS SIX TRUCKS, in design and engineering, are the outstanding units in the ½-ton and 1½-ton capacity fields. Their low prices and small operating costs appeal strongly to truck operators — and Willys dealers are digging into this profitable market.

Write or wire for franchise particulars

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WILLYS

A BIG SIX priced like a four
A POWERFUL EIGHT . . .
A BRILLIANT KNIGHT . . .
2 NEW WILLYS TRUCKS

Look at a few *plus* signs ... *for a change!*

Percentage of New York City New Car Sales in middle-incomed districts

Price Class	Six Months Sales 1931	1930	Increase or Decrease
Under $750			
Austin	47.8%	—	
Chevrolet	58.6	58.3	+ .3
DeVaux	58.8	—	
Durant	66.7	50.0	+ 16.7
Essex	56.6	54.8	+ 1.8
Ford	52.1	50.7	+ 1.4
Plymouth	59.2	57.8	+ 1.4
Pontiac	59.7	53.0	+ 6.7
Whippet	70.6	59.9	+ 10.7
Willys 6	59.1	51.4	+ 7.7
Willys 8	56.8	—	
$750-$1050			
Chrysler 6-66	55.0	51.1	+ 3.9
DeSoto 6	57.9	56.6	+ 1.3
DeSoto 8	56.9	54.5	+ 2.4
Dodge 6	59.7	55.7	+ 4.0
Graham Std. 6	62.9	57.7	+ 5.2
Graham Sp. 6	53.2	54.8	- 1.6
Hupmobile C 6	56.3	50.0	+ 6.3
Marmon 70 (69)	55.6	45.4	+ 10.2
Nash 6-60	59.3	—	
Nash 8-70 (S6)	57.0	55.6	+ 1.4
Oakland	47.3	53.7	- 6.4
Oldsmobile	56.0	60.6	- 4.6
Studebaker	60.4	57.5	+ 2.9
$1050-$1450			
Auburn	49.1	48.4	+ .7
Buick 114	53.2	—	
Buick 118	51.8	50.6	+ 1.2
Chrysler 70	43.5	41.3	+ 2.2
Dodge 8	53.8	56.6	- 2.8
Graham Sp. 8	52.3	38.2	+ 14.1
Hudson	54.9	52.4	+ 2.5
Hupmobile C 8	56.0	50.4	+ 5.6
Nash 8-80 (TI6)	53.3	52.2	+ 1.1
Studebaker D 8	55.3	51.0	+ 4.3
Willys Knight	52.3	51.4	+ .9
$1450-$1950			
Buick 124-132	44.2	49.8	- 5.6
Chrysler 8 (77)	39.6	40.2	- .6
Hupmobile C	54.2	—	
Hupmobile H U	47.2	41.0	+ 6.2
Nash 8-90 (TI8)	54.1	44.4	+ 9.7
Peerless Std. 8	50.0	47.2	+ 2.8
Reo 6	48.2	53.1	- 4.9
Studebaker C	47.4	—	

Source: News new car registration analysis 1930-1931.

MOST car markets today are singing, "I can't give you anything but love, baby,"—but not New York.

Down here, dealers are meeting customers instead of creditors, high hatting the sheriff, and converting cars to cash. Demand is keeping one jump ahead of deliveries, show rooms aren't cluttered with dead storage, and collections are good. As a whole, car sales in New York City are 2.4% below last year; *but sales in New York City middle-incomed districts are ahead.*

In the first six months, New York City and suburbs bought 120,000 new cars,—which is good-time volume any way you figure it. For this period, contrast New York with the not so sunny South, the vanishing West, and the remainder of the sleeping sales map:

	Six Months Sales 1931 % of Last Year
UNITED STATES	71.2
NEW YORK CITY	97.6
Middle-incomed districts	*101.4*
New England States	82.8
Middle Atlantic States	81.7
South Atlantic States	81.4
Pacific Coast	72.8
East North Central	67.1
Western Mountain States	64.8
West North Central	63.9
East South Central	56.9
West South Central	55.1

In 1931, New York City heads the list of active car markets by wide margins—because it has more jobs per capita, more money in circulation, more families with bank books, more widely diversified industry and trade to take up slack, more department stores selling more goods, more home-owners and tax payers, more building to keep up with a faster growing population, and more wealth per capita than any large city under the sun!

And the most active buyers in the New York car market today are the 600,000 families in the middle-incomed districts—with incomes averaging from $2000 to $4000. These families buy a majority of cars sold here. They own 100,000 more cars than five years ago and they are buying more cars this year than they did last year—from Chevrolet, Pontiac, Willys, Chrysler, De Soto, Hupmobile, Nash, Oldsmobile, Buick, Studebaker, and other companies. And they have taken an increasing share of New York sales on all cars priced under $1450. Today they represent the most desirable part of your most desirable market!

YOUR messages can reach most of them through the medium most of them read—The News! Bought by more than 1,000,000 families in New York City, The News reaches more New York City families than any other paper—and more in the suburbs! The small page gives greater visibility. And the largest circulation gives lowest cost. Significantly, automotive advertisers used less space the first half of this year in every New York and Brooklyn paper (with one exception involving a merger)—but 31% more space in The News! For more sales this year, try New York—and The News!

THE NEWS, *New York's Picture Newspaper*

Tribune Tower, Chicago + Kohl Building, San Francisco + 220 EAST 42nd STREET, NEW YORK

Passenger Car Brakes

By D. L. GALLUP
Vice-President and Director of Engineering, Bendix Brake Company

There may still be some doubt as to whether the average driver knows what is at the business end of his brake pedal. At any rate, he is surely beginning to know what the pedal itself is for and to expect it to be easy on him, regardless of his available muscle, speed on the road or state of nervousness. The police are now making road tests, often compulsory, and a brake pedal is supposed to produce results even with a ninety-pound girl behind it. On the other hand, the same driver doesn't care much about contributing money too often to keep the brake at maximum efficiency.

Brake construction has changed from brakes in the last twelve months. The simple and very cheap external bands are now gone. "Trick designs" are also conspicuously absent. Brakes are supposed now to be fully operative, in spite of mud, water and oil (in reasonable amounts). Furthermore, all the limited pedal travel is supposed to be useful to take care of lining wear and drum expansion. A brake construction so inexact or complex as to require several inches of pedal travel to take up the initial clearance is no longer tolerated.

With present high speeds, drum expansion is a real item. A drum temperature of over 400 deg. F., during a single stop is not infrequent. Any very high overall leverage ratio from pedal to brake shoe would cause a "washout" during one such top. Low pedal pressure must now be gained in other ways than increasing overall ratio.

The list of brake types that have any appreciable representation today is:

(1) Servo brake (two or three shoe); (2) simple two-shoe (non-Servo) hydraulic actuation; (3) semi-rigid internal band; (4) floating shoe, connected to the anchor by a link; (5) simple two-shoe (non-Servo) mechanical actuation.

The brake hookup is now simplified in construction and in number of variations. Flexing cross shafts, shafts in swinging hangers, intricate superimposing of whiffle trees upon one another, differential gearing, floating pulleys, etc., are all absent. Thus there are now in common use only the following:

1. Rigid hookup. Usually only a single cross shaft with a center bearing to give complete independence to the hand and foot brakes. There are some excellent double cross shaft arrangements operated by a compression as well as a tension rod from the pedal.

2. Equalized front and rear. This has a double cross shaft with ordinarily a single vertical equalizer at the end of the pedal pull-rod.

3. Hydraulic. In this the parking brake is almost universally a mechanical propeller shaft brake, although there are instances where the hydraulic shoes are applied mechanically to provide the emergency brake.

Drum scoring has received considerable attention. Linings are available that are very free from scoring. Some car builders are going even further and using cast drums, steel drums with cast liner or a composite drum of alloy steel.

The all-cast drum for passenger cars has the disadvantage of increase in weight over the steel drum. The cast section must be considerably greater than that of steel to prevent drum breakage due to fatigue under the alternating stress to which a drum is subjected. The all-cast drum, furthermore, when intended for use at high speed, usually has to be machined all over for balance, which adds to its cost.

The available steel drums with cast liners so far are principally of two types. In one the liner is centrifugally cast inside the steel shell. In the other the liner is separately cast and machined and then inserted in the shell either by splitting the liner, overlapping the ends and re-expanding inside the shell or else by pressing or spinning an edge of the shell down over a rib on the liner. There is one additional type, in which the shell is made with spider-like arms, which are welded to the mid-point of the liner.

The composite drum is ingeniously made by rolling alloy steel in the form of ribbed flat strips. These strips are then formed into hoops and butt welded. This hoop is easily welded again to a light, low-carbon, steel back.

The five representative types of brake already mentioned are sufficiently well known not to require special description. Certain of the characteristics are worth mentioning, however.

In the two or three shoe Servo brake, the tangential force exerted by the brake drum upon one shoe is transmitted to the shoe ahead of it and thus produces a high ratio of output to input, but without an exaggerated degree of high local pressure, uneven lining wear, or sensitiveness. The two-shoe brake has been simplified by the use of one anchor instead of two and a cam construction, which makes the brakes practically as effective in reverse as forward. Hydraulic actuation can be used with this type quite advantageously.

The non-Servo two-shoe brake is practicable, with hydraulic control for cars of any size, because the overall ratio with hydraulic hook-up can be made high in efficiency and will remain so during long service. The performance provided by the combination of non-Servo brakes and hydraulic control has features which make a decided appeal to many of the automotive engineers.

A semi-rigid internal band makes use of high selfactuation which would be characteristic of a band which forms a relatively complete wrap. By limiting the flexibility of this band, the extremely rapid wear of lining close to the anchor, which was characteristic of the full-wrapping flexible bands, is prevented.

Selfactuation in a brake is an item of considerable importance. In a floating shoe, the link which connects the shoe to the anchor makes the brake shoe, in a measure, self-adjusting, and allows it to move so as to compensate for the unavoidable variations in coefficient of friction of the lining. A limited arc of shoe is a part of this design.

The non-Servo two-shoe me-

(Continued on Page 16)

N. J. HIGHWAY DEPT. IN SAFETY CAMPAIGN

Trenton, N. J., Aug. 26.—As a step in the campaign to reduce the number of automobile accidents, drivers of state cars in the Highway Department have signed safety pledges in the form suggested by Commissioner Hoffman of the Motor Vehicle Department.

The ten suggested rules for strict observance are printed on small cards to be carried or displayed in each of the automobiles to remind the operator of his promises. Violation of the pledges, it is announced, will be followed by dismissal. The pledges begin with a declaration that the signer recognizes that traffic safety is the result of observance of certain established rules on the part of all users of streets and highways. The ten rules are:

To respect the rights of all others using the streets and highways.

Never to drive too fast for conditions.

To observe strictly the right-of-way rule.

To drive always to the right side of the street or highway.

To pass another vehicle only when conditions are safe for passing.

To drive slowly and carefully past schools or where children are at play.

To give signals in stopping or turning.

To watch out for pedestrians and yield them their rights.

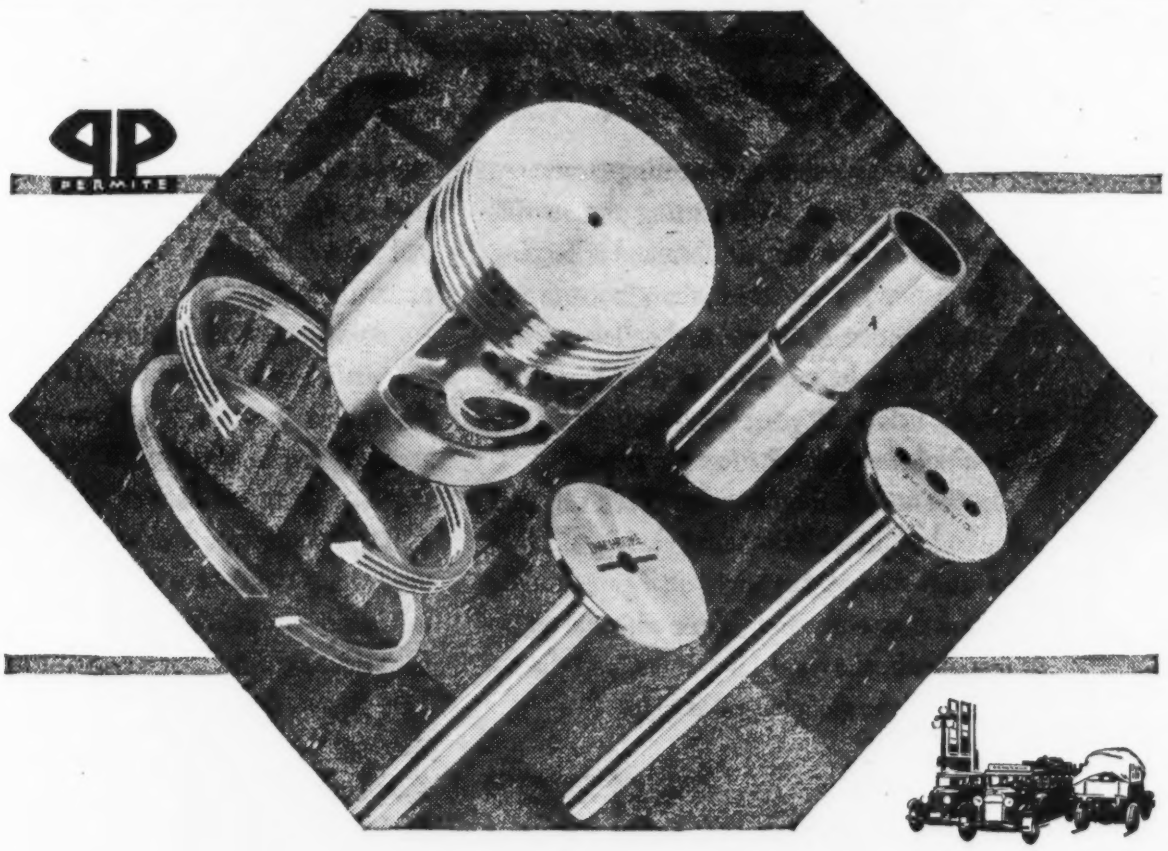
To obey all signs and traffic signals.

To keep my car in a safe mechanical condition.

In short, to drive attentively at all times and to observe strictly all rules of the road.

JOPLIN CHEVROLET DEALERS HEAR TALK BY WELLINGER

Joplin, Mo., Aug. 26.—Improved business in automobile sales this fall was predicted at a district meeting of sales managers for Chevrolet motor car dealers here this week. Herman Wellinger of Kansas City, sales promotion manager for this territory, including sections of Missouri and Kansas, was optimistic about fall prospects. Plans for a district-wide sales campaign on Chevrolet cars were outlined. Sales managers attending were from Springfield, Columbus, Parsons, Baxter Springs, Chanute, Nevada, Neosho, Carthage, Fort Scott, Pittsburg, Iola and Joplin.



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OF OVER A MILLION CARS PER YEAR

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Permite Semi-Steel Pistons
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Permite Piston Rings
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INTELLIGENT research, practical testing, careful inspection—this is the combination which achieves quality, proves quality, and keeps quality.

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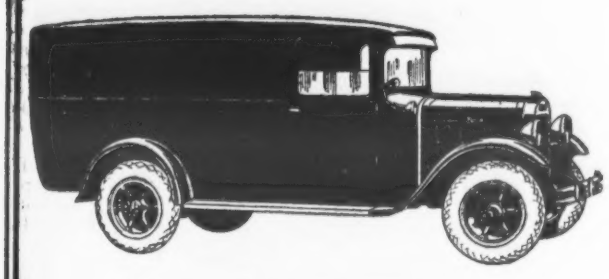
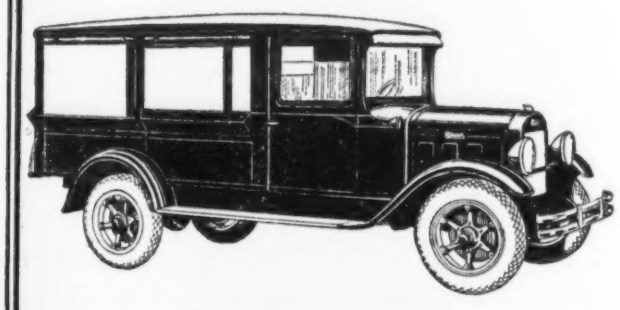
PERMITE PRODUCTS

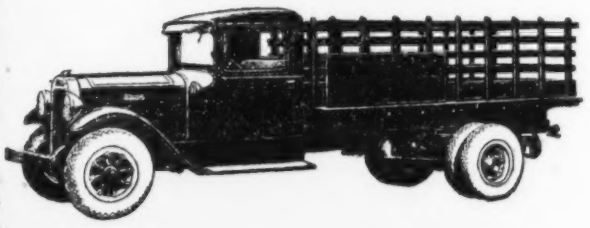
USED BY THE MAKERS OF OVER A MILLION CARS PER YEAR



Stewart 1 Ton—Panel Body

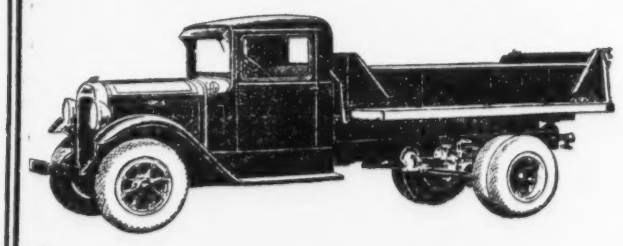


Stewart 1½ Ton—Covered Express Body

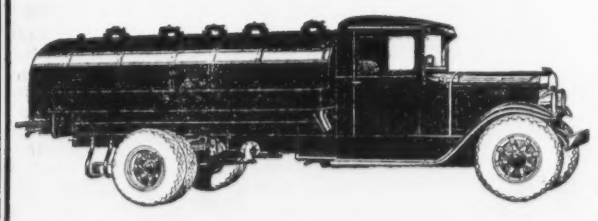


Stewart 2½ Ton—Stake Body

Stewart 3½ Ton—Van Body



Stewart 5 Ton—Dump Body



Stewart 7 Ton—Tank Body

Sell Trucks and Make Money

Many passenger car dealers are maintaining their profits and sales volume by selling motor trucks. The amount of money necessary to handle the Stewart line is astoundingly small.

Liberal Dealer Discounts

Stewart offers a complete line of quality trucks at moderate prices, with liberal dealer discounts. There are thousands of Stewarts in use in more than 600 American cities and 86 foreign countries. Write or wire for complete information, catalogs, prices and discounts.

Chassis Prices $695 to $5700
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Stewart Trucks Have Won — By Costing Less To Run

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TOBY LIGHT DELIVERY INCORPORATES NOVEL FEATURES

New York City, Aug. 26.—The Toby Truck, a light delivery, incorporating several novel features in automotive construction, is announced by Lee Tobin Distributing Corporation, with headquarters in the General Motors Building, this city. The wheelbase is 60 inches and the wheel tread 48 inches. Each wheel is independently suspended in aviation rubber cord.

In its departure from conventional construction the unsprung weight of springs, frame, tie-rods and axles has been eliminated. According to the manufacturer only one-half the usual number of parts are used in this new light delivery and twice the the power is available per pound. The unit weighs 800 pounds. It is claimed to attain a speed of 50 m. p. h. and to operate 40 miles per gallon of gasoline.

The carrying capacity of the Toby is 800 pounds; it over-all length is 90 inches, width 54 inches and height to top of body 62 inches. The loading space is 43 inches high, 52 inches wide and 87 inches long, providing 78 cubic feet. The bottom of the truck is 8 inches from the ground.

The Toby light delivery commercial car

The new unit, powered by a 4-cylinder Continental engine with a bore of 2¾ inches and stroke of 3 5-32 inches develops 30 b. h. p.

Coil ignition is used; starting and lighting are made by Auto-Lite.

The ribbed disk wheels mount 26x3.50 tires on 19-inch rims.

The gasoline tank capacity is 8 gallons.

The road clearance is 8 inches and the turning radius 9 feet.

FLEET POLICY DEFINED BY N. J. SUPREME COURT

Trenton, N. J., Aug. 26.—An interesting decision has just been handed down by the New Jersey Supreme Court in the case of the United Roofing Company vs. the Independent Bonding and Casualty Insurance Company of Newark, in that an automobile fleet policy issued to a company covers automobiles owned by the president of the company while being used by the general manager upon company business. Upon denial of liability under such a policy the assured is under no obligation to submit its claim for property damage to arbitration, according to the court. The assured can recover under such a policy to the amount of the judgment, with interest, if within the policy limits, the cost of the suit and a reasonable counsel fee, if he has been forced to pay one.

BRIGHT COLORS GAINING FAVOR, SAYS DUCO CHART

(Continued from Page 1)

rent fashion importance, no change occurs in the components of this color family. Effulgent serge blue has returned to leadership.

"The green color trend is forging straight upward. From present indications it seems possible that green will surpass blue in importance. Greater diversity of popular appeal is apparent in the four leading green values than prevail in the indices of the four leading blues at this time. Median values of blue green on the order of parrot, holiday and Billard, the newest green value of outstanding merit, will probably be the types of green to achieve greatest fashion importance in the near future, to judge from present indications.

"Brown's recent gradual decline appears to have again terminated. It is difficult to account for brown's lack of appeal so far this year. Brown has not dominated the world of automobile colors since March, 1930. Deep, rich seal, a reddish hue of brown, is the only new brown of importance to reach the group of leaders since last month.

"Maroon has resumed its declining movement. What little interest this hue attracts at this season appears to be centered in light reddish tones similar to Chester Hunt red.

"Gray is heading directly downward. Pure neutral grays never have been excessively popular as motor car colors. A few grays of brownish, greenish, or bluish hue have appealed for short intervals, but have been unsuccessful in advancing the gray color trend higher than fifth place.

"The fact that gray has been the least used hue over a period of years should render it most attractive to those seeking the utmost individuality in motor car colors. Deep, rich, neutral Muscateer gray, in combination with lighter Chatillon gray are particularly recommended in this connection."

CRUDE OIL OUTPUT UP; IMPORTS OFF

New York, Aug. 26.—The American Petroleum Institute estimates that the daily average gross crude oil production in the United States for the week ended August 22, 1931, was 2,608,250 barrels, as compared with 2,498,500 barrels for the preceding week, an increase of 109,750 barrels.

Imports of petroleum (crude and refined oils) at the principal United States ports for the week ended August 22, totaled 1,034,000 barrels, a daily average of 147,714 barrels, compared with 2,049,000 barrels, a daily average of 292,714 barrels for the week ended August 15, and a daily average of 190,857 barrels for the four weeks ended August 22.

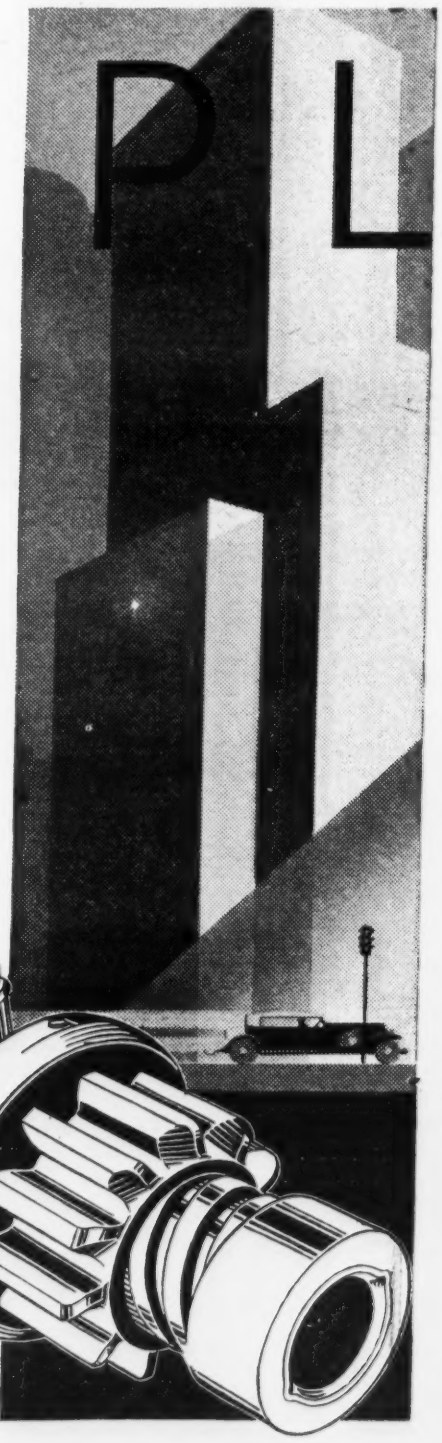
SIMPL

IN STARTING

Simplicity is characteristic of the Bendix Drive—in its design and in the way it works; this sturdy, dependable mechanical hand that cranks your car.

Automatically it takes hold, cranks the engine, releases; and protects the starter from damage in unintended operation. A great majority of cars have the Bendix Drive, proof of its simplicity and dependability.

ECLIPSE MACHINE CO. · Elmira, New York
ECLIPSE MACHINE CO., *Ltd.* · Walkerville, Ont.
(SUBSIDIARIES OF BENDIX AVIATION CORPORATION)



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Bendix Brakes, Bendix Drive, Eclipse Aircraft Starters and Generators, Stromberg Carburetors, B-K Vacuum Brake Boosters, Aircraft Propellers, Bendix-Westinghouse Air Braking Systems, Marine Instruments, Scintilla Aircraft Magnetos, Pioneer Instruments, Delco Aircraft Ignition, Weather Instruments, Cowdrey Brake Testers and other equipment.

BENDIX
AUTOMOBILE

Servicing the Battery

By C. H. MUNSON

Service Manager, U. S. L. Battery Corporation 4

As the best watch needs rewinding and the best tire needs reinflating, so the best battery requires careful attention.

A fully charged battery standing idle for a month will lose thirty-six points of gravity. In the hot summer months this rate of self-discharge may increase to as high as fifty points of gravity.

Because of this characteristic of self-discharge, common to all automobile type lead and acid storage batteries, it is important that batteries in stock, batteries in new automobiles in car dealers' stocks, and batteries in cars laid up for the winter be given regular attention at least once in thirty days.

If the gravity of any cell of an idle battery is below 1.250 (at 80 degrees Fahrenheit) or the battery has been idle for thirty days, the battery should be taken from the car or stock shelf and put on the charging line and the plates brought to a fully charged condition. It is not sufficient to attempt to keep the battery in proper condition by running the car a few minutes or an hour periodically. This method of caring for an idle battery is expensive and decidedly unsatisfactory. One of the prime essentials in caring for any battery, and especially in caring for an idle battery, is that, periodically, at least once in thirty days, the plates shall be brought to a fully charged condition.

A hydrometer test only is not sufficient to determine that a battery is fully charged. The well equipped battery shop will always have an accurate, low-reading voltmeter for checking the voltage of each cell of a battery while on charge.

A battery on the charging line should be charged at a rate approximately equal to one ampere per positive plate per cell. For example, a thirteen-plate battery has six positive plates per cell and the charging rate should be six amperes. A lower rate, four or five amperes should be used in hot weather to keep the battery temperature below the permissible maximum of 110 degrees F.

A battery on the charging line is fully charged when the voltage of each cell reads 2.5 volts or better, while the charging current is flowing at the proper rate and neither voltage nor gravity readings have changed for a period of three hours.

The periodic full charging of a battery is important because it is the only means of completely eliminating the normal lead sulphate from the plates that is formed during discharge. If this normal lead sulphate in the plates is allowed to stand without being broken up periodically, it changes into "basic" sulphate, which, due to its hard crystalline form, is very difficult to break up and usually results in premature failure.

Some manufacturers equip their new cars at the factory with semi-charged batteries. Such batteries, as they are installed in the car, are usually sealed to prevent air entering the battery. Access of air causes rapid sulphation of the plates if the battery is permitted to stand for a considerable period after the vent plugs have been removed before the battery is filled with electrolyte and charged. This is true even though the vent plugs and sealing disc are replaced within a comparatively short interval after removal.

The various types of semi-charged batteries, as manufactured by the leading battery companies, have attached to each battery complete instructions for preparing the battery for service. The strength of electrolyte to be used, the rate of charge and the time for the boosting charge vary, depending on the processes of the manufacturer. This makes it important that the car dealer, mechanic or battery service man handling the job of placing such semi-charged batteries in service follow exactly the instructions for that particular type of battery. Unless instructions are followed exactly, serious damage is very likely to result.

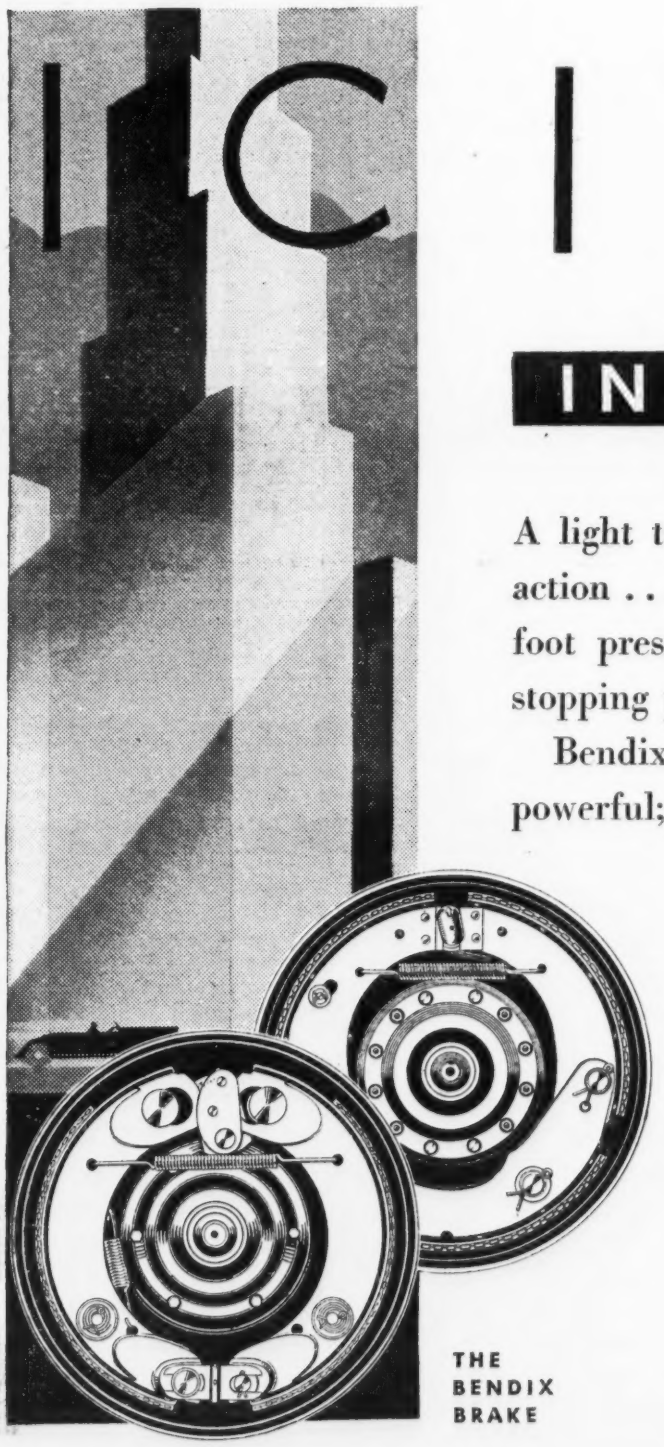
Battery service is specialized work and most car dealers as well as car owners will do well to place their battery work with a good battery station, having efficient personnel and the necessary equipment; especially accurate instruments.

The competent battery station will make the necessary records to enable him to make or advise the customer regarding any necessary change in generator charging rate to meet driving conditions. There is the rather general impression that there is a fixed generator-charging rate for summer and another for winter and that proper results can be obtained by making such arbitrary settings.

This is not a fact. The manufacturer originally sets the generator to charge at an average rate varying from ten amperes to fourteen amperes. This is a pretty good average setting for possibly 50 per cent. of the drivers, but for the other 50 per cent. it is not the right setting at all, due to the fact that their driving conditions are entirely different from the average. The result is that unless the rate is changed to meet driving conditions, the battery will either receive far too much or too little charge. Either of these conditions, if allowed to continue, will cause premature failure of the battery.

Accurate records of hydrometer readings at monthly intervals, together with record of mileage and charging rate, permit the high-class battery service station to perform a real service to individual customers and car dealers alike in this respect. Only by such records can accurate judgment be made of necessary adjustments of the generator charging rate to bring the rate of charge in balance with the condition under which the car is driven. The ideal condition is, of course, to have the

(Continued on Page 31)



IC ITY

IN STOPPING

A light touch does it. Bendix SERVO action . . . exclusive . . . multiplies light foot pressure into smooth, tremendous stopping power.

Bendix Brakes are simple, rugged and powerful; dust-proof, rain-proof, positive, uniform, dependable . . . important reasons why they are first choice of most leading manufacturers.

BENDIX BRAKE COMPANY • South Bend, Indiana
(SUBSIDIARY OF BENDIX AVIATION CORPORATION)

THE BENDIX BRAKE

PRODUCTS and AVIATION

8,000,000TH CHEVROLET LEAVES FLINT LINE; IS 2,845,938TH SIX

(Continued from Page 1)

manager; J. M. Crawford, chief engineer, and others.

No exhibition tours or other special arrangements have been made for the car, which is now on its way, along with several thousand others built the same day, for delivery to an unsuspecting owner somewhere in the region served by the Flint plant.

The car followed the seven millionth Chevrolet in a year and three months, and is the 2,845,938th six-cylinder unit turned out by Chevrolet since the change-over from a four in 1929.

The seven-millionth car was built May 28, 1930. In the period between this and the eight millionth car, the products of the company forged to first place in passenger car registrations, and took the lead among all makes in production during recent months. Although organized in 1911, the company spent twelve years building the first million cars, that event having occurred in 1923.

Thereafter the second and third millionth products followed at two-year intervals and the fourth millionth came off the line on January 11, 1928, less than a year after the third. Again in 1928, on September 8, another million was rounded out, and on June 25, 1929, number 6,000,000 came off the line at Flint.

EMBLEM OIL CO. PLANS $50,000 BULK STATION

Warren, Pa., Aug. 26.—The Emblem Oil Company, marketing subsidiary of the United Refining Company, one of the largest independent refiners of Pennsylvania crude oil, has plans in progress for the construction of a $50,000 bulk distributing station and service plant at 26th and French Streets, Erie.

NEW MANUFACTURING FIRM

Larchmont, N. Y., Aug. 26.—The Instan-Starter, Inc., has been chartered to operate a plant for the manufacture and distribution of automotive starting equipment and accessories.

Chevrolet Dealer Boosts 1931 Truck Sales

Lincoln, Neb., Concern Gives Most of Credit to Service and Repair Department, Which Operates on 24-Hour System

THE truck department of the DuTeau Chevrolet Company, 18th and O Streets, Lincoln, Neb., has sold approximately 10 per cent. more new and used trucks during the first seven months of 1931 than for the corresponding period a year ago, while the volume of truck service done so far this year has been almost 15 per cent. more than a year ago. While the gain in sales has been due almost entirely to used truck sales, Al DuTeau, president of the company, is justly proud of his truck department's record, in view of the fact that the volume of sales of commercial cars for the state of Nebraska is considerably below last year's record for the seven months.

The DuTeau company's service and repair department is given much of the credit for the company's very satisfactory sales record on trucks this year. The shop maintains a day-and-night schedule, and this fact is talked up to a very good advantage by DuTeau salesmen to truck customers.

"Most of our commercial car sales this year have been delivery jobs going to the urban firms and fleet operators," said Mr. DuTeau, "and we have been able to impress upon them the desirability and saving in time and money effected by being able to bring their trucks in for repair and service at the close of their working day, having their vehicles worked on by the most expert Chevrolet mechanics in the city and then having their trucks ready to go back on the job the next morning. While this idea naturally appeals to all truck owners, it makes an especially effective sales point in selling to the small storekeeper or merchant who has only enough work to keep one truck busy. This small truck operator can cut down his overhead on deadhead delivery jobs materially by taking advantage of our shop service, which relieves him of the necessity of maintaining an emergency truck. We make our overnight service doubly attractive and valuable to the one-truck operator by providing him with a delivery job at cost in case a repair job on his own truck cannot be finished in one night. While we only break even on the rent of the truck, the idea more than pays for itself by bringing in additional shop business and truck sales."

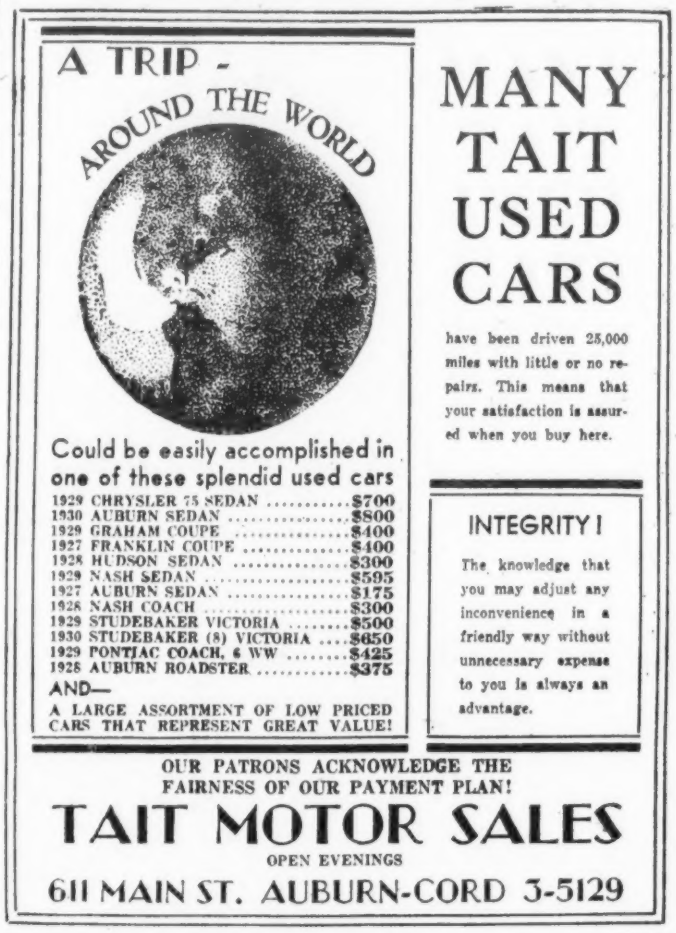
In addition to serving as an effective sales aid, Mr. DuTeau points out that his company's overnight service and repair system on trucks and light commercial jobs is even more valuable in boosting the volume of truck service business. Incidentally, the same service is offered on passenger cars. The volume of shop business, both for passenger cars and trucks, has shown an increase every month this year over the corresponding month a year ago.

While the sale of trucks to farmers this year has fallen down under 1930, due to restricted plantings and decreased prices for farm products, the sale of delivery jobs and heavier trucks to large fleet operators and road construction contractors has held up fairly well, the DuTeau company finds. Used trucks, like used cars, have moved better than last year.

The DuTeau Chevrolet Company has taken advantage of the used truck sales trend to concentrate upon the sale of such jobs this year. The company maintains one of the largest and most attractive used car lots in Nebraska, and a portion of this has been set off for used truck display. An average of from five to ten used trucks are kept in this display. These trucks are not "junkers" or "off" models which the company has had trouble in getting rid of, but late models which are known to be in demand. The used car lot is in a busy section of the city, and the attractive truck display serves to attract dozens of prospective truck purchasers every month. Many of these prospective buyers purchase a truck they have seen in the display, while others are induced to buy new trucks. Those who do not buy immediately go on the prospect list and make splendid material for the salesmen to work on.

Mr. DuTeau looks for the farm truck business to pick up somewhat this fall when the live stock start moving to market, and he is planning an elaborate display of new Chevrolet trucks at the Nebraska State Fair, which will be held in Lincoln in September. The Lincoln Chevrolet dealer also takes advantage of parades in the city, which attract many farmers to town from the outlying country, to display his new trucks by donating the use of them as floats, etc. He is of the opinion that the surface has just been scratched, so far as truck sales are concerned in Nebraska and the Middle West, and he looks for a material increase in the truck business within the next five years.

Plays Up Unused Mileage


A TRIP -
AROUND THE WORLD
Could be easily accomplished in one of these splendid used cars
1929 CHRYSLER 75 SEDAN $700
1930 AUBURN SEDAN $800
1929 GRAHAM COUPE $400
1927 FRANKLIN COUPE $400
1928 HUDSON SEDAN $300
1929 NASH SEDAN $595
1927 AUBURN SEDAN $175
1928 NASH COACH $300
1929 STUDEBAKER VICTORIA $500
1930 STUDEBAKER (8) VICTORIA $650
1929 PONTIAC COACH, 6 WW $425
1928 AUBURN ROADSTER $375
AND—
A LARGE ASSORTMENT OF LOW PRICED CARS THAT REPRESENT GREAT VALUE!
MANY TAIT USED CARS
have been driven 25,000 miles with little or no repairs. This means that your satisfaction is assured when you buy here.
INTEGRITY!
The knowledge that you may adjust any inconvenience in a friendly way without unnecessary expense to you is always an advantage.
OUR PATRONS ACKNOWLEDGE THE FAIRNESS OF OUR PAYMENT PLAN!
TAIT MOTOR SALES
OPEN EVENINGS
611 MAIN ST. AUBURN-CORD 3-5129

THE TAIT MOTOR SALES, Auburn-Cord dealer in Springfield, Mass., uses considerable newspaper space to tell its used car story. The latest, reproduced above, is based on the unused mileage in the given list of cars priced from $175 to $800. While occupying space of only three columns by 8½ inches, the ad stands out and is distinctive

LONG BEACH, CAL., CAR DEALERS PLAN TO FIGHT PROPOSED "WHEEL TAX"

Long Beach, Cal., Aug. 26.—Members of the Long Beach Motor Car Dealers Association met at luncheon recently to protest reports that a "wheel tax" might be put on automobiles by the city. The meeting was for the purpose of fighting the proposed legislation before it was enacted, rather than to try to combat it after it became a reality.

R. O. Gould, president, head of the R. O. Gould Company, Chrysler dealer, acted as chairman. He stressed the asserted inequalities of the proposed tax, declaring that automobiles today are taxed more than any other necessity.

Mr. Gould pointed out that, in addition to county and city personal property taxes, the automobile owner in Long Beach pays the $3 annual registration fee and a 3-cents-per-gallon gasoline tax. He emphasized that these taxes are not levied on radios, washing machines, vacuum cleaners or other articles which contribute to higher standards of living.

"The automobile owner has always been the goat when legislative bodies attempt to find new ways of revenue," stated Mr. Gould. "Perhaps this is the survival of the time when only the extremely wealthy could own an automobile and it was regarded as a luxury. Today automobiles are necessities and should not be regarded as targets for money-raising purposes."

NEW USED CAR LOTS

Bloomfield, N. J., Aug. 26.—Two of Bloomfield's miniature golf courses are to be reopened this week as used car showrooms. The Bob-O-Link will be used car headquarters for Mehrhof Motors, Inc., of 640 Bloomfield Ave. The other course is on Lackawanna Plaza, opposite the railroad station. This course, known as the Handy-Andy, will be used by the Plaza Company.

MOVES TO NEW HOME

Charlotte, N. C., Aug. 26.—The Southern Parts and Bearing Company, one of the largest automotive supply houses in this section, has moved into its new home at 315 North College St.

Making BRAKES SAFER — and brake service MORE PROFITABLE

MULTIBESTOS

BRAKE LININGS — CLUTCH FACINGS

Multibestos Products are developed by research — manufactured under laboratory control — proven by gruelling service — aggressively merchandised.

The MULTIBESTOS Line

Multibestos LX Flexible Moulded Brake Lining
Multibestos LX Sets for Ford and Chevrolet
Multibestos LX Friction Blocks
Multibestos LX Friction Slabs
Multibestos Regular Woven Brake Lining
Multibestos Bus Duty Woven Brake Lining
Multibestos Woven Liners for Chevrolet, Pontiac and G.M.C. Trucks
Multibestos Woven Clutch Facings
Multibestos Moulded Clutch Facings
Multibestos B R Moulded Clutch Facings
Multibestos Transmission Linings for Ford (Model T) Cars and Trucks
Multibestos Rivets
Multibestos Brake Servicing Equipment
Multibestos 8X Industrial Moulded Rigid Segments
Multibestos 8X Friction Blocks
Multiduty Industrial Woven Lining

MULTIBESTOS COMPANY

General Sales Offices, 235 Harvey St., Cambridge B, Mass.

To automobile manufacturers, automotive jobbers, garages and service stations, Multibestos represents a dependable and efficient source of supply.

BRANCHES: CHICAGO, 1223 S. Michigan Avenue · NEW YORK, 250 West 54th Street · DETROIT, 4-123 General Motors Bldg.
OAKLAND, CALIF., 4000 East 8th Street · DALLAS, 2622 Cedar Springs · FARNHAM, P. Q., Dewey and Almy Chemical Co. of Canada, Ltd.
EXPORT, 461 Eighth Ave., New York City · GERMANY, Darex A. G. Frankfurt, a/M · ENGLAND, Dewey and Almy Ltd., Edmonton, London, N. 18

AUBURN

SUCCESS

For the first seven months of 1931 Auburn Automobile Co. shipments were 30,240.

This is 16,549 more cars than for the entire 12 months of 1930.

And 7,673 more cars than for the entire 12 months of the peak year of 1929.

In other words, Auburn sales are up 155%.

More than 700 new dealers have joined Auburn's ranks so far this year.

And, at the same time, the number of cars per dealer has more than doubled.

Significant from a production standpoint, is the fact that Auburn dealers got cars when they wanted them.

But the most important result of Auburn's success this year is the fact that owners of these five new Straight Eight models are very enthusiastic and thoroughly convinced that they have made the wisest of investments.

Growing years are the most profitable years for dealers.

Write or wire for further details about the Auburn Franchise.

AUBURN AUTOMOBILE COMPANY AUBURN, INDIANA

PENN. DRIVER TEST REQUIRES USE OF STANDARD GEARSET

Philadelphia, Aug. 26.—Every applicant for a driver's license in this state, whose automobile is equipped with free wheeling, must demonstrate his ability to use the conventional gear-shifting mechanism while taking the state examination, according to Benjamin G. Eynon, commissioner of motor vehicles.

Some new car owners, he said, are taught to drive with the free wheeling feature of their car and for that reason he advised that they familiarize themselves with the use of the gear-shift. Examiners report that the majority of applicants having cars equipped with free wheeling insist on using it when taking the examination for an operator's license and in doing this they do not use the clutch when shifting from second to high gear, or vice-versa.

The Department of Motor Vehicles does not consider this a fair test of the applicant's ability to operate a motor vehicle with the use of the clutch, nor does it permit the use of separate so-called free wheeling devices, some of which are purchasable for installation on almost any type of car, when these devices do not allow the operator to revert to and make use of the conventional gears and thus obtain the additional deceleration from the back-compression of the motor. The new rule is made in the interest of general safety.

GOODRICH TO REWARD 20 YEAR EMPLOYEES

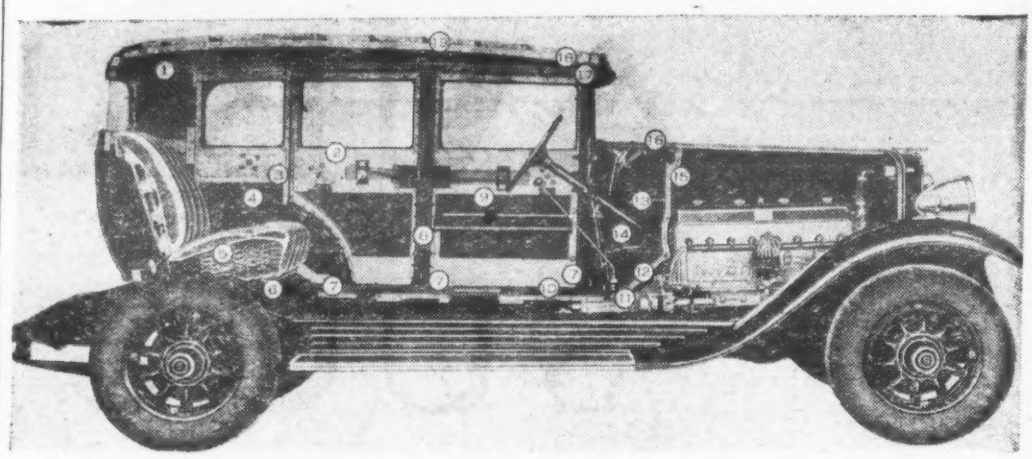
Akron, O., Aug. 26.—Eight B. F. Goodrich Company employees, six in Akron and two in Los Angeles, will receive twenty-year service pins this month, it was anonunced recently by A. C. Sprague, Goodrich employment manager.

The awards will be made to Allen Barrett, processing division; John Glennen, maintenance department; C. A. Scott, Philadelphia Rubber Works Company; John Welfley, tire division; Ernest Welton, plant protection; Charles P. Ross, mechanical division, and H. S. Carly and J. L. Kelley, Pacific Goodrich Company, Los Angeles.

NEW TESTING STATIONS

Newark, N. J., Aug. 26.—The Brake Stations, Inc., to operate brake testing stations in Newark, has been formed by A. Denburg and Joseph S. Rawit, Newark, and Harold L. Danziger, Belleville.

Nash Reveals Sound Proofing Features



Interesting revelations of the new automobile science of "silence engineering" may be traced in this new Nash body, cut in half to show many of the new sound-proofing processes. Numbered details include the following:

1. Anti-squeak insulating material is inserted between metal and wood wherever these materials meet, as in roof braces, rafters and netting.

2. Laminated wood—non-warping and permanently silent—is used for all lock boards, seat and cushion frames.

3. Concealed door checks with large, live-rubber bumpers quiet all doors.

4. A drain pan and hose prevent accumulation of water in the rear body quarter.

5. Spiral seat springs are silenced by cotton pads. Curled hair is used in the seats.

6. The metal rear seat support is insulated by anti-squeak fabric.

7. Steel pillar posts, wheelhouse and pillar braces are quieted by anti-squeak fabric.

8. The steel pillar post is insulated from the frame by rubberized fabric to make the parts permanently silent.

9. Steel-and-wood doors are fully insulated to eliminate drumming.

10. Floor boards of five-ply laminated wood, instead of metal, stop rumbling noises. Thick felt padding under a heavy rubber mat covers the floor.

11. Ply-wood toe boards, asbestos sheeted, eliminate motor heat and sound.

12. Steel dash-to-sill braces are applied to the wood over coverings of plastic compound and a layer of anti-squeak material.

13. Front end construction, entirely of steel, is insulated by heavy padding to prevent vibration and noise.

14. Complete interior insulation of the body is achieved by coating the metal panels with plastic compound, over which felt padding is applied to prevent road hum.

15. Both sides of the dash panel are heavily insulated with fiber composition and felt to dissipate heat and sound through the hood louvers.

16. Heavy wool padding is applied to the bracing of the upper and side cowl panels to prevent friction, vibration and sound.

17. Plastic material and rubberized fabric separate wood roof rafters from the metal shell to insure silence.

18. The strong U-shaped header bar is heavily insulated from the roof rail.

19. Roofs are completely silenced and protected by pastic compound and rubberized fabric.

GEORGIA ELIMINATES EMERGENCY SALES TAX

Atlanta, Ga., Aug. 26 (UTPS).—Elimination of the emergency sales tax was probably the most important piece of legislation completed by the Georgia General Assembly, which has just closed its 1931 regular session.

Other important measures, from the standpoint of the motor vehicle industry, were (a) the combining of the motor vehicle license department with several others to form the new Revenue Commission; (b) the passage of a measure taking the enforcement of the automobile license tag law out of the hands of the highway department and vesting it with the local sheriffs; (c) changes in the present bus law to permit control of bus terminals and to strengthen other features of the original measure, and (d) passage of a measure allowing for reciprocal agreements with other states regarding automobile license tags.

BACK FROM BERMUDA

Newark, N. J., Aug. 26.—Albert De Cozen, sales manager of the De Cozen Motor Company, is back at his desk again, having returned from a ten-day vacation with his wife and daughter in Bermuda George Wolfe, office manager of the De Cozen Motor Company, has left for a ten-day vacation in Nova Scotia.

COME INSIDE *and* SEE *gasoline* VAPOR *at* WORK!

JUMP into the swirling tornado of the intake manifold and ride up with the vapor. Let's see gasoline when it's *important.*

We are blown through the intake valve—down into the cylinder. But look out! The intake valve has snapped shut and the piston is rising, compressing the vapor! Crushing it as you might crush a sponge to a fraction of its size. It's time for the spark.

Zip! A tiny flash of lightning and the vapor is ablaze. A blue ball of fire spreads out from the spark-plug . . . pushing the unburned gasoline before it . . . eating into it with its flame. More and more burns. It's getting hotter and—BAMM! What was that? Blinding white light . . . the blow of a thousand-pound sledge hammer and heat from a gigantic blast-furnace all rolled into one. That was *knock.*

But stick around. They are switching the feed line to a tank of Ethyl Gasoline. Watch the difference.

It starts out just the same. Spark. Blue ball of fire spreading . . . spreading . . . spreading. Heat and pressure going up steadily. More and more burns. Way over in the side of the combustion chamber the last bit is squeezed . . . squeezed. *Watch it!* Is it going to explode in another furious crash like the other one?

No. The Ethyl fluid in Ethyl Gasoline *controls* combustion: prevents the shattering explosions that cause power-loss, harmful knock and overheating. It develops the power of gasoline with a smoothly increasing pressure that brings out the best performance of the engine. That's why Ethyl Gasoline makes any car run better. That's why it is the most economical motor fuel in the long run. Use Ethyl yourself. Recommend it to others. You will profit by the difference. Ethyl Gasoline Corporation, New York City.

© E. G. C. 1931

GOOD GASOLINE + ETHYL FLUID = ETHYL GASOLINE

The active ingredient used in Ethyl fluid is lead

ETHYL — ANTI-KNOCK — ETHYL GASOLINE CORPORATION — Controls Combustion

ETHYL GASOLINE

THIS SPECIAL

FRANCHISE IS PRODUCING VOLUME *NOW*

Four-cylinder $625, Six-cylinder $725
Chassis f. o. b. Lansing, Michigan
Dual Wheels $35 Extra

To the question "How can I maintain my overhead this year?" Reo's New 1½-Ton Truck at $625 returns a reassuring answer. Reo's Special Truck Franchise (with regular dealer discounts)opens today's most active market to you—with a product that is easily proved superior. The initial investment is small. The sales-opportunity is great. Mail the coupon *now.*

REO MOTOR CAR COMPANY
LANSING—TORONTO

REO MOTOR CAR CO., Lansing, Mich.
Please send me at once—either by letter or through your representative—details of the Reo Special Truck Franchise. ADN827

Name_____

Address_____

City _____ State

Automotive Executives and Their Wives

Vote TIME

Their First Choice Magazine

TO 1462 officers and directors of automobile and accessory manufacturers, a leading advertising agency recently mailed a questionnaire: "What magazine, weekly or monthly, do you read most regularly, most carefully, cover to cover?" In other words, "What is your first choice magazine?"

Automotive executives were chosen as representative of leading business men of the United States.*

The answers show that great quantities of circulation are not necessary to reach the influential, active men and women predominant in American business and social activities. For magazines with many times the circulation of TIME are well below TIME in preference.

Replies from all branches of the automotive industry show that TIME with its selected circulation, its appeal to "educated people who take life intelligently," is an overwhelming first choice. Consider the detailed vote:

	Circulation	*Advertising Rate*	
TIME	350,000	$1430	is the first choice of 31%
Second Magazine	2,900,000	8000	is the first choice of 20%
Third Magazine	1,400,000	4000	is the first choice of 15%

NO OTHER MAGAZINE of any size received as much as 10% of the vote and all of the so-called business and financial magazines, excluding FORTUNE, received a combined vote of only 7.5%.

The executives were also asked, "Does your wife read the same publication?" Again TIME leads all other magazines both in total number and in percentage of wives reading TIME.

But automotive executives are too shrewd to buy space in a magazine simply because they like it and read it themselves. They buy TIME because they know that thousands and thousands of other influential, educated, prosperous people read and enjoy TIME every week from cover to cover.

They recognize the existence of a Primary Market—people who can afford to buy cars oftener and who can afford the accessories and replacements that keep cars in good looks, in good condition. They recognize that TIME is the first choice magazine in this primary market.

• • •

That is why more passenger cars are now advertising in TIME than in any other magazine, except The Saturday Evening Post. TIME is second in pages of tire advertising, 4th among all magazines in pages of total automotive advertising.

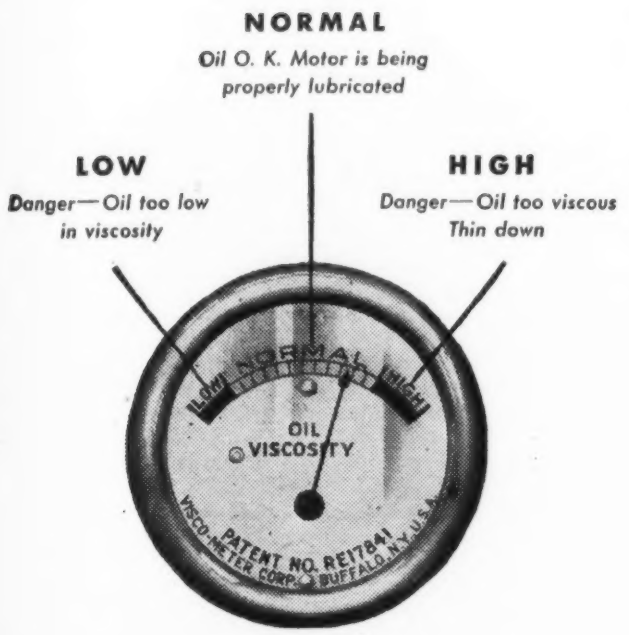
TIME

The Weekly Newsmagazine

NOW OVER 350,000 CIRCULATION

* The same questionnaire has also been sent to bankers and railroad executives. In each case the agency reports that TIME received more first choice votes than any other magazine and in each case more of the wives read TIME than read any other magazine.

Do you know this about OIL?



Lubricating value is measured by Viscosity

Viscosity is continually changing when the engine is running

Safe Lubrication requires a constant knowledge of operating Viscosity

Operating Viscosity can only be known thru the Visco-Meter

ON the dash, right before your eyes, Visco-Meter provides lubrication knowledge that assures safe lubrication. Oil waste is ended—mileage charts, laboratory tests and other methods of guessing are discarded.

Visco-Meter enables bus and truck operators, fleet owners and motorists to select oil on a performance basis as applied to each individual engine and its operating conditions. Get the Visco-Meter story. Visco-Meter Corporation, 310 Grote St., Buffalo, N. Y. . . . Detroit Office: 6-247 General Motors Bldg.

VISCO-METER CORPOR
ATION, 310 Grote St., Buffalo, N. Y.
Gentlemen: Please send me full details on Visco-Meter, including the new booklet "a practical test for viscosity."
Name
Address
City

The VISCOMETER
Takes the Guesswork out of Motor Lubrication

VISCO-METER INDICATES VISCOSITY CONTINUOUSLY WHILE THE ENGINE IS RUNNING

NOW . . . *select your ride*

with a touch of the finger!

MONROE RIDE SELECTOR

A new era in riding comfort! A sensational, revolutionary improvement! The new Monroe Ride Selector makes all roads feel alike!

Through the Selector lever conveniently located on the dash, the driver may instantly adjust all four shock eliminators to meet *any* road conditions.

On smooth, well paved highways, passengers enjoy the full play and resiliency of the car's springs.

Now the pavement ends—there's rough going ahead! A touch of the Selector lever, and the hydraulic eliminators are set to absorb the severest shocks. It's hard to tell just where the roadway changed!

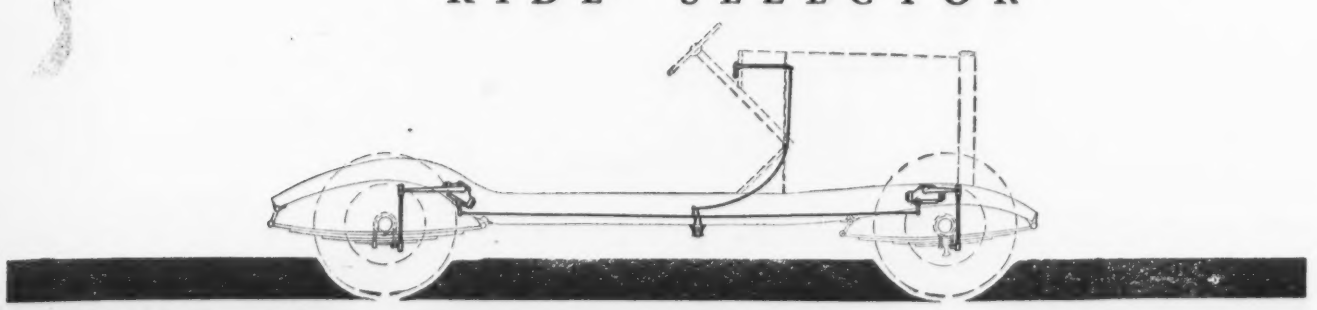
Another important advantage—the Monroe Ride Selector prevents side sway and body weaving, thus imparting a comfortable sense of security.

Extremely simple to operate, yet quick and definite in action. The Monroe Ride Selector carries a strong appeal to car manufacturers who seek distinctive, advanced features with which to capture the buying public.

We will be glad to install the Monroe Ride Selector on your test cars. The Monroe Auto Equipment Company, Monroe, Michigan.

MONROE

RIDE SELECTOR



Showing how simply, yet effectively, the Ride Selector functions—instantly exercising the proper control on all four shock eliminators.

Presidents See Industry Set for Revival in 1932

(Continued from Page 1)

dustry, that any spurt forward that may come, due to seasonal activity or improvement in merchandise, will be only temporary and of very, very short duration.

I think things will be extremely quiet, at least until the spring of 1932. This is the time for people to cut their expenses down and cut their cloth to fit the garment; in other words, make their expenses in line with results that they are sure they can obtain with the proper sales effort.

By C. A. TILT
President Diamond T Motor Car Co.

No industry, no organization and no individual can afford today to fix upon the calendar for the basis of improved business to come. The days of '29 are history, nor is there any magic in the figures 1932. There is little to be gained by relying upon the recovery of the farmer, the manufacturer, the retailer or any other important group as a basis for better business.

The business to be done in the rest of this year and the next will depend upon what we do, not what the world does for us. Our own plans for consolidating and increasing our present business gains include no period of "watchful waiting."

Buyers will come in the market only when they cannot afford to do otherwise. It must be recognized that obsolescence is as great a factor as wear. New trucks are bought today and will continue to be bought, not because the old trucks are completely worn out—they could be rebuilt and rebuilt almost indefinitely—but because the operator gets lower costs with new ones. It must put money in his pocket to replace with new equipment, and when it does he needs little urging.

We shall continue to reduce the production and distribution costs of our products. We shall constantly widen the demand for Diamond T trucks by building the finest possible equipment and pricing it far below any previous standards of value. New trucks must sell to operate cheaper than old ones, including the absorption of their first cost.

On this basis, and this basis only, we confidently expect a substantial increase in volume from all classes of industry. Already we have chalked up monthly gains from last year, largely as the result of the production of our new one and one-half ton Model 216, which for the first time brought heavy-duty truck construction to the low-price market.

We are this week introducing a new two-ton Diamond T, which will equally set a new precedent by bringing low price to the heavy-duty field. This class of merchandise and this kind of merchandise is our answer to the business problems of the present and immediate future.

Build the finest product possible and price it so that they cannot afford not to buy.

By M. L. PULCHER
President Federal Motor Truck Co.

It would seem that the depression, which is now running on twenty-three months, should be very close to an end. According to the best statisticians, we are on a U shape bottom and about half of this bottom has been completed.

It is also on record that all depressions pass out with the harvesting of fall crops, and while all crops have been enormous and the prices are low, it is going to create a lot of new money, and we are hoping that this fall will see a betterment of general conditions.

SEEKS BUS FRANCHISE

Englewood, N. J., Aug. 26.—Applications for municipal consent from the city of Englewood to operate a bus service over Broad Avenue and State Highway Route 4, as part of an extension of service from Hackensack to the George Washington Bridge Plaza in Fort Lee, has been filed with the Englewood Common Council by Public Service Co-ordinated Transport, together with a request for permission to extend the present line terminating in Englewood and Nyack to the Bridge Plaza.

BRAKES FOR PASSENGER CARS

(Continued from Page 6)

chanical brake, which is one of the oldest and simplest types, is at present limited to small and rather light cars, since, even with lining with a high coefficient of friction, its effectiveness cannot be very high. On such cars, however, it is quite satisfactory.

Air brakes supplied by either a small compressor or less satisfactorily by an accumulator, are available for de luxe equipment. The system is similar to that used successfully on buses.

In the booster brake field, the vacuum type is available in such sizes and leverages that it can be applied to the larger and faster cars to reduce the initial pedal pressure to a very desirable point for ease of control in traffic, but without at the same time making the brake sensitive and hard to handle for emergency stops at high speed.

There are also available at the present time a few forms of mechanical booster. These are connected to the propeller shaft and use the momentum of the car to assist in applying the wheel brakes. There is some propeller shaft brake action also inherent in their use. The market also has a hydraulic booster operated by an electric motor. This is a unit which can be attached in the field.

There are, in limited use, some types of mechanical compensators designed to take up rigging clearance rapidly and then so change the leverage as to exert a powerful braking effort. These, of course, require careful installation and subsequent maintenance of adjustment.

With Servo brakes, lining combinations can be selected to alter the brake characteristics and to assist in the elimination of scoring and give longer lining life.

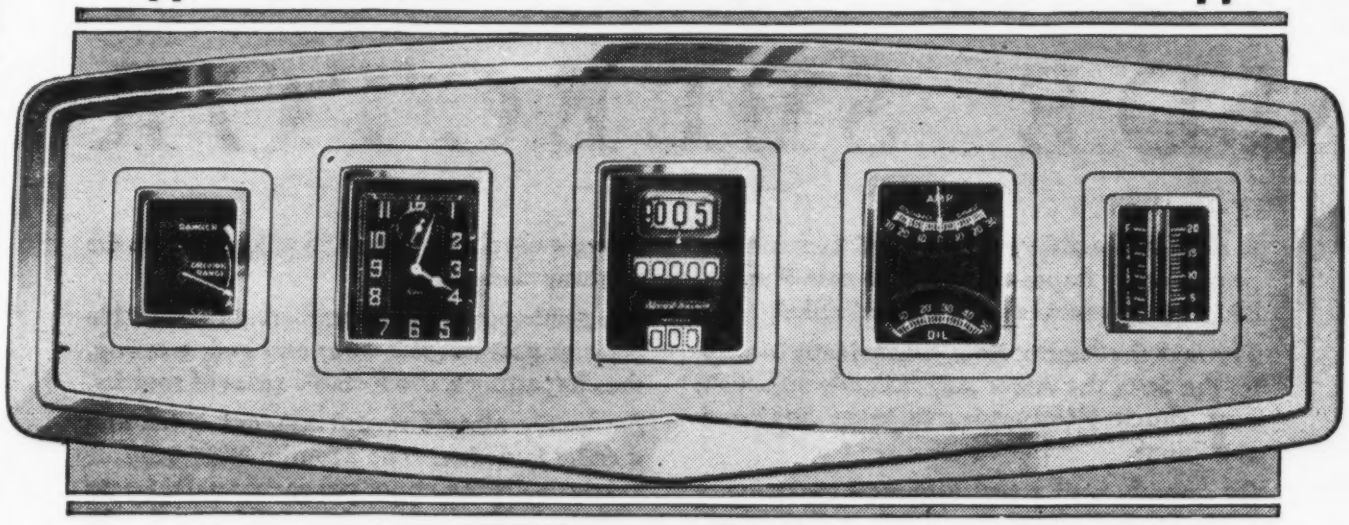
For the past year, therefore, brake developments can be briefly summed up as follows:

1. Elimination of freak designs or those whose only claim was cheapness.
2. Improved and simplified hook-up design, with better performance.
3. Simpler brake adjustment.
4. Lower initial pressure.
5. Improved brake lining materials.
6. Improved brake drums.
7. More extensive application of boosters.
8. Better brake service available.
9. More attention paid to brake performance by the public and by the state and local authorities.
10. Better general understanding by the public of brakes and their possibilities.

STEWART WARNER

TRAFFIC TESTED PRODUCTS

Instrument Panels
Speedometers
Oil Gauges
Gas Gauges
Electric and Hydraulic
Heat Indicators
Electric and Pointer Type
Fuel Pumps
Mechanical and Electric
Vacuum Tanks
Bumpers
Shock Absorbers
Horns, Cigar Lighters
Spotlights



Featuring the

STEWART-WARNER INSTRUMENT PANELS

An added mark of distinction notable on fine cars of today is the Stewart-Warner Instrument Panel. These panels are of dependable Stewart-Warner quality—and are furnished in any type, size or design specified, complete with the Stewart-Warner Speedometer and other instruments, ready for immediate installation. Our engineers will gladly co-operate with you in designing distinctive panel equipment for your cars. Stewart-Warner Corporation, Chicago, U. S. A.

Built by the Largest Manufacturer of Automobile Accessories in the World

Throughout the Entire Year...

4 to 1

Sales Leadership*

Four people have purchased the Buick Eight to every *one* buyer of any other of the thirteen eights in Buick's price range during the twelve months since its introduction. This four-to-one preference—in days when America is scrutinizing values more closely than ever before—fully confirms the value leadership of The Eight as Buick Builds It. It is this outstanding value which causes 89 per cent of all Buick owners to buy Buicks again and again.

** Buick has sold four times as many eights as the next most popular eight in its field, August 1, 1930, through July, 1931, according to official figures by R. L. Polk & Company*

BUICK EIGHT

Four Series of Straight Eights with Bodies by Fisher—22 Luxurious Models—$1025 to $2035, f. o. b. Flint, Michigan

WHEN BETTER AUTOMOBILES ARE BUILT, BUICK WILL BUILD THEM . . . A GENERAL MOTORS VALUE

The Viscosity Factor in Engine Lubrication

By GEORGE R. ECKSTEIN, B. S.
Lubricating engineer, Visco-Meter Corporation

With the advent of larger motors with greater numbers of cylinders and correspondingly higher driving speeds, the motoring public is turning its attention to the specifications of the oil it uses. One so often hears: "What is the best oil?" "Are expensive motor oils worth their cost?" "What oil should I use in my motor?" "Is the oil in my motor all right?" "How often should I change my oil?" "What S. A. E. viscosity number oil does my motor require?" etc.

A lubrication engineer is at a loss to know where to begin to answer all these questions. For example, if he were asked to advise which S. A. E. viscosity should be used, he must know the make of car, the running conditions pertaining to air temperature, motor speed and length of trips taken and perhaps he would like the mileage on the motor so that he could estimate its wear, etc. At any rate, the questions are not at all easy to answer. If the specification is obtained, what assurance has the driver that the same will be satisfactory for air temperatures three months from that date or after 10,000 miles of motor wear? In the last analysis, the oil must be matched to each particular motor with its particular condition and operating conditions.

The question comes up: "What must I consider in picking the proper oil?" The public hears oil discussed from all angles. It hear flash points, fire points, gravity, carbon residue, pour point, viscosity, oiliness, dewaxing, color, etc., until its head is in a whirl, and it is no wonder that it turns and asks sheepishly, "How do I know good oil when I see it?"

In all the characteristics mentioned, which one should the public be most vitally interested in, which one if neglected might cause serious damage? The answer is viscosity, or the measurement of the lubricating value of an oil. It is the most important single factor in the qualification. The other factors are those with which a technical man should interest himself, but not of sufficient importance to worry the driver. The question the driver should ask himself is, "What viscosity or body has the oil in my motor?" "Is it heavy enough or is it possibly too heavy and, if it is not correct, what damage am I doing to my motor, what can I gain by correcting it?"

Briefly, the correct condition to maintain is that the oil be of sufficient viscosity so that a film of oil is kept between bearing surfaces so that there can be no metal-to-metal contact. If the viscosity drops to such a limit where the film can be squeezed out or broken, that is when wear takes place. On the other hand, the limit of viscosity can be taken to the other extreme where the oil is so thick that it cannot circulate freely, the oil pump sucks air and the bearings go dry.

By reasoning a little, it would seem that there must be a viscosity limit which would be ideal, where the body is heavy enough to main-

(Continued on Page 26)

Material Handling at The Buick Plant

By H. L. WECKLER
Works Manager Buick Motor Company

Material handling at Buick, where the plant structures extend for a mile and a half north and south and for about four city blocks east and west, is an important phase of the manufacturing operations.

When an engineering O. K. is received by the production control department, the first step is to route the particular part. This routing is based upon the location of equipment, and its capacity. On new parts the correct information is obtained by the production control department, from the master mechanic and the plant managers as to where they will be made. Contacts are also maintained by the production control department, with the engineering cost and efficiency departments, all of which are vitally interested in the routing and handling of the materials.

The sales department, after conferences with the management, provides the data as to requirements in the territory and from these data a master finishing schedule is set up. Purchase orders are scheduled through the purchasing department for materials to be delivered at a rate to protect manufacturing conditions, taking into consideration the materials required to float the various machining operations.

Floats are established through contact with the plant management and the factory production control department. Our definition of a material float is the minimum amount of material required to operate the manufacturing division with maximum efficiency, taking into consideration the necessity of providing protection to the manufacturing division at various points where it is necessary to maintain banks of material to eliminate unnecessary machine set-up.

The unloading and handling of material required in the manufacture of the product and purchased from the various manufacturing divisions as predetermined in the routing of the individual part is a function of the material control department. At this point the purchasing department maintains receiving department auditors, who assume the responsibility of insuring that the amounts of materials received and billed to us agree with the invoices. Material is delivered either to a storeroom or to the primary operation where manufacturing conditions permit us to do so.

We find it very advantageous to deliver material direct to the primary operation wherever possible, and by so doing eliminate considerable handling. Also, by delivering direct to the primary, our experience has shown that we have been able to reduce material floats, as on most major items material is received daily to meet the finished car schedules.

The physical equipment for handling materials includes locomotive cranes, electric bridge cranes, trackless trains, trailers, electric trucks and conveyors of all types. Three locomotive cranes are used for handling loose materials and ten overhead cranes for raw materials, such as billet steel, pig iron, scrap iron, sheet metal, etc., and for die assembling. Most of these electric cranes have magnet equipment of from five to fifteen tons capacity.

Seven tow motors and seventeen tractors constitute the motive power for the trackless train system, hauling from six to ten cars each. These trains are rapidly replacing the electric trucks, using wheeled skids that can be readily moved about rather than the "dead" skid. With the train system, systematic routing can be maintained, with one-way aisles through the plant buildings.

Eighteen tractors and fifty-six trailers are maintained for handling large and heavy materials. The amount of traffic handled by these trailers can be judged from the fact that they will average 1,000,000 pounds per day.

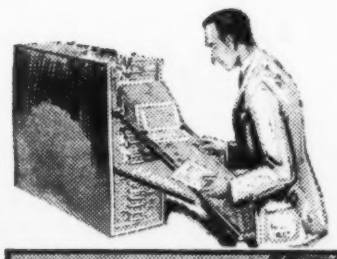
The conveyor equipment includes

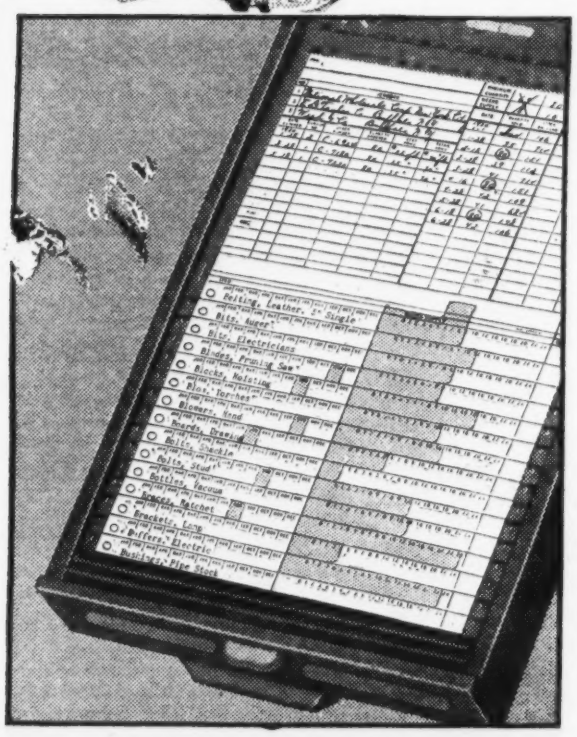
Continued on Page 26

STREET RAILWAY GETS 2 BUS LINE PERMITS

Westfield, N. J., Aug. 26.—The Springfield Street Railway Company has been granted a permit by the City Council to operate buses over two routes in this city, one of these routes being from Park Square to the West Springfield line on the proposed Westfield-Springfield bus line.

KARDEX Stock Control saves 50% of Clerk Time *and* Stock Investment





IF you're looking for ways and means of cutting costs, here's an operating record that reduces clerk time and stock investment 50%. Moreover, Kardex Stock Control affords even greater savings by automatically keeping your inventory of parts at a profitable low level.

Brilliant colored signals flash "Minimum", "Maximum", "On order", "In transit", "Obsolete" and every condition that affects your stock. You purchase automatically and economically. There's no danger of dollars lying idle on your shelves for indefinite lengths of time. Turnover and profits grow together. A complete visible analysis of all your stock items can be made in minutes. That's how effective the Kardex signal system is . . . truly a modern operating record.

Almost every automotive dealer and garageman who has installed Kardex Stock Control says "It paid for itself in a single year." Surely Kardex is an investment *you* cannot afford to overlook. Kardex Division, Remington Rand, Buffalo, N. Y.

Remington Rand

Send me your booklet "Let's Take Stock."

*Name*_____ *Firm*_____

*Address*_____

A. D. N.-8

THE PUBLIC DEMANDS THE COMMON SENSE PROTECTION OF SAFETY GLASS

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Protection and safety are as much a part of automobile construction as the wheels themselves. Safety Glass is one of the most important—one of the most necessary features of protection and safety that can be built into an automobile. • Libbey-Owens-Ford Safety Glass is known and preferred by the automobile buying public.

LIBBEY-OWENS-FORD GLASS COMPANY, TOLEDO, OHIO

Manufacturers of Highest Quality Flat Drawn Window Glass, Polished Plate Glass and Shatterproof Safety Glass; also distributors of Figured and Wire Glass manufactured by the Blue Ridge Glass Corporation of Kingsport, Tenn.

The following are users of L-O-F Safety Glass: Packard, Graham, Studebaker, Franklin, Reo, Willys, Willys-Knight and Ford. It is also used in Dietrich and Le Baron Custom Bodies, Reo Speed Wagons, Twin Coaches, Brill Trolley Buses, Cincinnati Trackless Trolley Coaches, Bender Bus Bodies, Hackney and Springfield School and Passenger Bus Bodies, White School Buses, Stinson Aircraft, Gar Wood Boats and Matthews Cruisers.

Listen to Floyd Gibbons every Sunday evening at 10:15 Eastern Daylight Time, over WJZ and associated NBC stations.

LIBBEY-OWENS-FORD SAFETY GLASS

what a sales winning combination

De Vaux

POWER & SPEED *plus* PERFECTED

free wheeling

De Vaux merchants have one of the greatest sales-makers in the Industry: — the wonderful thrill of De Vaux power and speed PLUS the sensation of perfected Free Wheeling.

With the well-known De Vaux-Hall flexibility of management, it would have been an easy matter to add a Free Wheeling "unit" months ago. But *thorough* tests of the Free Wheeling principle first had to be made, in keeping with the company's sound engineering practices. Thus, the perfected Free Wheeling in today's De Vaux is more than an "added feature"; it is an integral part of a beautifully-engineered motor car. It takes its place with such features as: —

More than 70 Horsepower, without special fuels . . . Six Port Intake Manifold . . . 113-inch Wheelbase and 58-inch Tread . . . Constant-Mesh Helical Gears and Quiet Second . . . 6-inch Frame, 2¼-inch Flange, Five Cross Members . . . Staunch, Quiet Hayes Insulated Steel-and-Wood Body . . . Styling by Count Sakhnoffsky, three-time winner of Monte Carlo Motor Salon

. . . and many other features of sales-creating value.

PRICES START AT

$595

F. O. B. GRAND RAPIDS

Special Equipment Extra

Among Recent Appointments Are:

NAME	TERRITORY
Automobile Sales Co.	Memphis, Tenn.
H. W. Burns	Syracuse, N. Y.
Lacy Edgerton Motor Co., Inc.	Roanoke, Va.
Lam Wing Yan & Co.	Hong Kong, China
New England Motor Sales & Service	Newport, R.I.
Oak Park Garage	Oak Park, Ill.
Pueblo De Vaux Co.	Pueblo, Colo.
Rickard's Garage	Corvallis, Ore.
Sanguenetti & Olsen	Stockton, Cal.
Smith & Clark	Indianapolis, Ind.
U. S. Stanley	Skohhegan, Me.
R. J. Walker, Inc.	Oklahoma City, Okla.
W. D. Weddell	Fargo, N. D.
W. A. Whitehead	Cedar City, Utah
Wittner Motor Co.	Jamaica, L. I., N. Y.

AN INDEPENDENT COMPANY

. . . completely financed . . . operating on one of the lowest overheads in the Industry . . . multiple turnover of materials inventory . . . *working* executives . . . strategically-located factories . . . experienced management.

De Vaux 6-75

70 TO 80 MILES AN HOUR

Confidential Inquiry Coupon

De Vaux-Hall Motors Corporation, Grand Rapids, Mich., or/Oakland, Calif.

Gentlemen: Send me complete information about the De Vaux Franchise.

Name_____

Address_____

Now Handling_____

HERE IT IS!...

the *new* sensation—

the quick profit opportunity you've been waiting for—

BENDIX

CLUTCH CONTROL

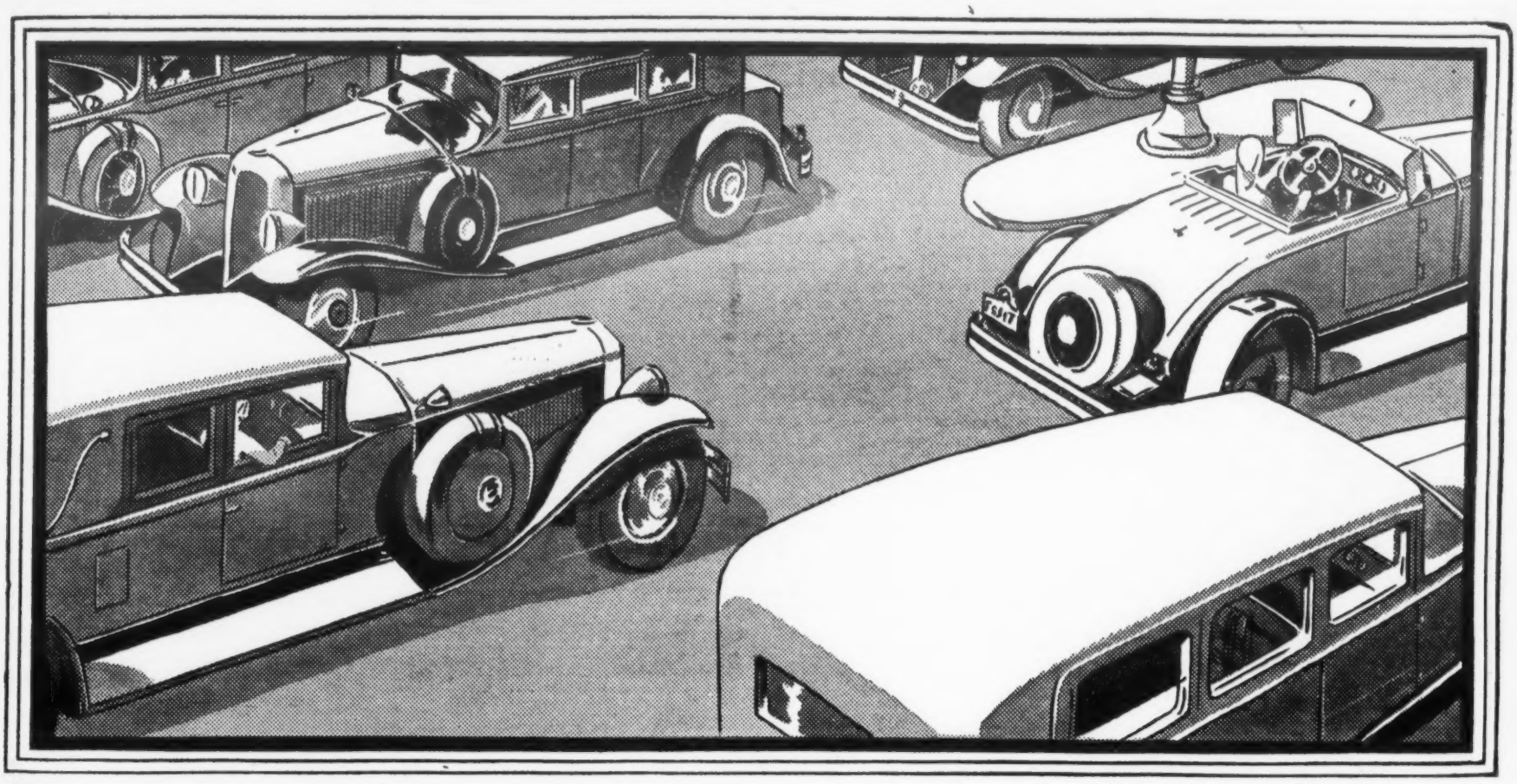
PLUS FREE WHEELING

Using only a soft, velvety touch on your accelerator, you go through dense traffic . . . stopping, starting, shifting all gears . . . without ever touching your clutch pedal.

★ ★ ★

EVERY motorist wants free wheeling. It's the livest thing in motoring today. And *optional free wheeling is only one of the many amazing advantages of Bendix (vacuum) Clutch Control.*

Drive for hours through densest traffic without ever once touching your



clutch pedal! No more tension; no more clutch fatigue!

It's simple as A. B. C. The waste power created by the vacuum of the intake manifold is used to operate the clutch pedal. A valve, which opens and closes the vacuum line, is controlled by the accelerator.

Lift accelerator foot and the clutch pedal goes down. Step on the accelerator and the clutch pedal comes up. It's instantaneous. Engagement is *perfect*—better than leg power; never gets tired. All clutch operations are performed by your accelerator pedal in a perfectly *natural* easy manner.

Bendix (vacuum) Clutch Control is entirely selective, optional. To drive as usual, simply advance the hand throttle a few degrees.

Don't overlook this grand opportunity. Get busy now, and skim the profit cream in your territory.

Write us for details of our complete merchandising plan.

Bendix Aviation Corporation, Dept. B-K 51, South Bend, Indiana.

FULLY PATENTED

Basically protected by patents and patent applications in U. S. and abroad; and exclusively licensed under Patent No. 1470272.

BENDIX CLUTCH CONTROL

from $19.50 up

BENDIX AVIATION CORPORATION, Dept. B-K-51
Dept. B-K 51, South Bend, Ind.

Please send me full details of your complete merchandising plan for the Bendix (vacuum) Clutch Control.

*Name*_____

*Address*_____

*City*_____ *State*_____

Dealer's Shop Must Be Able to Compete With Specialists

(Continued from Page 2)

a legitimate profit which it has a right to expect if so organized and carefully followed.

A number of our successful dealers have been using the direct-by-mail campaign to their customers. This has brought in an additional amount of service work and has been carefully followed after repairs have been made as to the satisfaction given by such repairs. One of our most successful follow-up systems is conducted by our distributor in Boston, Mass., Franklin Motor Car Company.

With the improvements in automobile design, the major repair operations which were quite common in the past no longer represent the volume of service work.

The dealer who is not equipping his shop to compete with the specialized grease and oil stations is bound to lose a large portion of such repairs.

Service work can no longer be conducted as a monopoly by the dealer or considered a necessary evil to sales.

Service Comes Into Its Own

By D. T. STANTON
Director of Service
Dodge Brothers Corporation

To use a trite expression, it is an ill wind that blows nobody some good.

The slowing up of new car sales in the last year or so has elevated the automobile dealer's service department from a necessary something maintained to keep customers' cars in running order to a potential part of his business and a wide avenue of good will. It has made the automobile dealer realize that he is a doctor as well as a purveyor of personal transportation.

Actually, the profitable operation of many a dealer's service department during the past year, as reports indicate, was literally forced upon him with no initial effort on his part. Owners, ordinarily accustomed to buying a new car every year or two, have decided, in the face of things, that the old car still had plenty of unused miles in it and that with a little servicing could be made to serve "until things pick up." Consequently the average dealer soon found himself enjoying a good run of business, with the result that additional new equipment was needed, more mechanics became necessary and overlooked accessory profits were beginning to be noticed.

In short, it was discovered that the "back door" was taking up a great portion of the slack that had developed at the "front."

Now that they have been discovered, the possibilities for profit existing in service work will not be overlooked with the advance of new car sales. No longer will the dealer be inclined to devote his time exclusively to the promotion of new cars, leaving the service department to shift for itself in the meantime Service profits have been tasted in the last year and will be developed rather than neglected in the future.

Just how greatly he injects his own personality into the service department determines to a great extent just how well that part of the dealer's business develops and prospers. It is not necessary that he himself contact every owner that visits his establishment for service, although it would be a good thing for him to do if he possibly could, but he can work closer with his service manager and other members of the department.

How often it is that the sales manager can be closeted privately with the dealer for an hour or two. If the service manager does not enjoy the same privilege, it should be made clear to him that his work is appreciated, that he is as responsible for his department as the sales manager is for his, and that he is free to come in to the "boss" and talk things over any time he feels like it. It makes for a closer contact and cannot help but result in an increased morale among the men who toil and sweat in the grime and grease of the garage. The service manager and his mechanics are as much a part of the business as are the sales manager and salesmen "out front."

The service department is no longer an "orphan." It is a vital part of the family and fully capable of bringing in its share of profit. Just how large a share that is and will be in the future, the dealer can control to a great extent by getting personally more interested in it.

Selling accessories is one spot where the dealer can be of great assistance to his service manager, who is essentially a mechanic and not a salesman. A little tip on how to merchandise accessories and service work will not only be appreciated by the service manager, but will undoubtedly result in a noticeable increase in sales.

Lastly, in building up his service department, the dealer should not cut corners in installing the proper equipment to do a job right. Equipment that upon first thought may seem too expensive to install soon pays for itself in labor and time charges saved. Furthermore, it makes a very favorable impression upon a customer to see that up-to-date and proper equipment is being used on his car.

By A. D. TURNER
Service Manager
Relay Motors Corporation

Truck dealers as a whole have not kept abreast of the times in trying to improve their own position during this depression. However, this does not apply to the entire distributing organization, as we have found that in our own direct-factory branches and with some of our larger or key distributors, they have actually had an increase in their parts business

(Continued on Page 33)

Monthly Motor Vehicle Production

United States and Canada

(Figures from United States Census Bureau and Dominion Bureau of Statistics)

Passenger Car Production

	1924	1925	1926	1927	1928	1929	1930	1931
January	294,458	317,335	388,900	289,902	312,284	396,773	243,673	143,909
February	347,436	357,230	337,900	377,376	361,726	431,793	273,078	197,948
March	359,997	338,182	422,568	363,595	388,519	548,489	342,247	241,727
April	346,124	397,915	403,271	377,713	384,778	571,856	327,894	239,736
May	290,487	384,819	396,218	378,921	494,444	583,310	382,819	230,941
June	220,487	369,955	359,534	296,035	481,018	488,280	298,130	213,748
July	247,918	304,109	330,007	246,530	357,682	439,598	230,761	.....
August	257,944	228,278	303,823	285,724	422,996	452,887	190,894	.....
September	287,731	275,973	365,863	235,724	374,278	378,048	182,049	.....
October	268,142	405,132	369,854	189,278	361,899	328,305	117,914	.....
November	297,982	337,750	279,131	124,985	223,896	176,629	104,986	.....
December	184,651	367,516	146,044	103,277	211,087	96,920	126,483	.....
Total	3,393,646	3,870,744	3,946,843	3,083,360	4,012,166	4,794,898	2,910,187	1,366,062

Motor Truck Production

	1924	1925	1926	1927	1928	1929	1930	1931
January	34,922	33,422	38,577	44,382	27,947	57,765	40,928	39,475
February	38,892	38,828	44,580	46,014	34,980	65,950	52,925	41,863
March	40,681	51,105	53,273	54,168	44,273	79,587	69,031	47,951
April	43,065	54,936	57,597	53,280	49,537	91,855	74,477	53,131
May	41,739	50,378	53,883	52,435	55,281	94,940	62,080	47,812
June	33,020	43,989	44,486	46,090	44,169	93,164	51,466	42,356
July	31,620	44,878	44,811	33,853	59,630	78,703	44,960	.....
August	33,465	39,921	43,313	36,796	69,547	59,985	43,296	.....
September	36,590	42,559	50,588	38,448	62,231	54,683	46,557	.....
October	38,038	51,943	48,237	38,182	63,921	66,235	41,928	.....
November	33,732	45,271	38,934	25,102	46,013	50,368	37,493	.....
December	31,391	37,899	31,203	24,400	32,464	36,583	34,840	.....
Total	434,140	537,056	566,818	497,020	588,993	826,817	580,991	262,508

Passenger Car and Truck Production

	1924	1925	1926	1927	1928	1929	1930	1931
January	329,177	351,247	334,477	254,284	249,191	432,538	283,610	178,344
February	384,329	396,158	382,480	323,390	336,709	497,795	345,961	239,811
March	400,658	390,247	455,841	417,763	420,792	628,076	417,118	288,308
April	392,249	452,851	460,838	430,993	434,315	663,811	486,281	292,867
May	332,221	439,198	450,101	431,356	459,725	678,250	444,899	327,853
June	263,507	413,944	403,020	343,025	425,196	581,434	349,596	256,297
July	279,538	410,987	374,818	280,383	417,312	518,301	275,721	.....
August	291,009	369,199	442,136	322,520	492,543	512,842	234,160	.....
September	304,321	336,532	416,451	271,572	436,507	429,729	228,606	.....
October	302,180	457,094	349,091	227,460	415,820	394,540	158,842	.....
November	241,654	383,021	266,129	149,987	268,909	226,997	142,161	.....
December	215,992	329,325	175,287	136,677	243,841	135,502	161,323	.....
Total	3,737,786	4,427,900	4,585,661	3,580,380	4,601,141	5,621,715	3,510,178	1,634,570

New Passenger Car Sales in United States

		1925	1926	1927	1928	1929	1930	1931
January	.....	184,769	193,748	174,624	136,071	219,760	180,094	124,786
February	.....	158,817	162,987	178,920	165,537	235,550	211,645	134,133
March	.....	249,971	278,619	260,134	264,214	377,802	296,824	208,841
April	.....	308,533	344,024	329,687	332,056	481,675	357,064	285,732
May	.....	338,794	396,504	317,922	351,459	484,122	346,031	247,727
June	.....	309,512	319,788	246,066	317,089	380,396	260,861	201,911
July	.....	319,964	360,700	250,315	324,120	432,503	254,098	.....
August	.....	261,307	306,790	246,961	329,674	376,886	203,737	.....
September	.....	193,168	267,471	187,678	271,821	304,452	175,286	.....
October	.....	247,002	241,094	165,383	284,939	288,697	150,219	.....
November	.....	193,972	161,013	134,635	211,736	183,756	93,066	.....
December	.....	154,676	153,743	82,189	166,883	138,555	96,054	.....
Total	.....	2,943,636	3,228,401	2,623,538	3,139,579	3,880,206	2,625,979	1,177,130

New Truck Sales in United States

		1925	1926	1927	1928	1929	1930	1931
January	.....	21,310	25,048	27,567	16,431	29,900	30,226	24,414
February	.....	19,973	23,177	26,437	17,510	32,637	31,880	23,475
March	.....	27,784	34,935	33,539	24,698	46,368	43,199	30,609
April	.....	33,965	44,846	37,294	30,272	58,709	47,070	36,851
May	.....	31,835	37,781	33,966	32,468	52,874	43,240	33,483
June	.....	27,709	33,223	28,495	29,155	45,114	33,531	28,490
July	.....	33,033	39,191	28,359	31,844	57,943	39,984	.....
August	.....	28,247	34,653	28,156	36,753	53,557	33,787	.....
September	.....	30,186	34,325	24,436	35,135	46,560	33,933	.....
October	.....	32,109	35,034	27,231	40,890	49,899	34,237	.....
November	.....	21,705	23,067	18,834	27,491	33,631	22,012	.....
December	.....	19,296	18,117	11,681	18,476	23,275	18,665	.....
Total	.....	333,150	386,997	327,965	341,123	527,057	410,609	177,328

Total New Passenger Car and Truck Sales

		1925	1926	1927	1928	1929	1930	1931
January	.....	186,079	218,796	202,205	152,502	249,660	210,330	151,200
February	.....	178,790	186,084	205,357	183,047	268,227	243,525	157,608
March	.....	277,755	311,574	293,673	288,912	424,170	341,023	231,450
April	.....	384,496	422,870	366,951	362,328	537,974	404,093	302,583
May	.....	371,629	434,285	351,888	383,927	507,806	388,317	281,216
June	.....	337,221	353,011	296,561	346,224	431,512	294,392	230,401
July	.....	352,997	399,891	278,674	355,964	490,446	294,002	.....
August	.....	295,554	343,443	274,117	366,427	429,443	237,524	.....
September	.....	223,355	301,796	212,114	306,956	351,012	209,219	.....
October	.....	279,111	276,128	212,614	325,829	338,596	184,456	.....
November	.....	215,627	184,080	153,469	239,227	217,387	115,078	.....
December	.....	174,172	171,860	100,870	179,359	161,830	114,719	.....
Total	.....	3,276,786	3,614,398	2,951,503	3,480,702	4,407,263	3,036,678	1,354,458

STEERING PRESENT DAY MOTOR CARS

The steering requirements for modern motor cars are so vastly different from those of a few years ago that the development of steering design and construction has been more rapid than in any previous period of automobile history.

In earlier days, steering was termed satisfactory if it would get cars around corners and keep them in their course at moderate speeds. The expenditure of a fair amount of muscular effort was expected in controlling a car, and speed had to be sharply reduced when turns or manoeuvers were to be made.

That such a steering would be extremely hazardous with the high speeds and heavy traffic of the present era is pointed out by F. F. Chandler, vice-president of the Ross Gear and Tool Company, manufacturers of the Ross roller-mounted cam-and-lever steering gear.

"Steering must be instantly responsive, must act from the pressure of a finger on the wheel, and must at all times be firm and steady," says Mr. Chandler. "If these qualities are not present to the nth degree, the steering cannot be rated as completely modern and safe. There are emergencies when brakes can be of no service and lives depend solely upon the speed and security with which the steering performs.

"Everybody should recognize these facts, and it is our observation that motorists are more and more coming to appreciate their importance.

"In our roller-mounted type of cam-and-lever steering gear we have increased the overall efficiency of the mechanism to minimize the conscious physical effort on the part of the driver and at the same time have reduced the tendency toward the possibility of over steering.

"What we have endeavored to accomplish is to implant in the driver the knowledge and confidence that he can point his car at will, without studied calculation, in the direction he wants to go.

"Another very important quality in modern steering is freedom from the necessity of making frequent adjustments. The average person is too prone to procrastinate about having adjustments made, and consequently may try to get along for a while with steering that is really far enough 'off' to be actually unsafe. This temporary tolerance of imperfect steering adjustment is just as common as with brakes, and it undoubtedly is responsible for many accidents.

"We feel that we have solved this problem by the use of antifriction bearings which make wear negligible and enable the gear to keep its adjustment for exceptionally long periods. Each of these bearings is fully adustable—and any one can be adjusted without effect on other adjustments. After adjustment the steering is just as precise, responsive and dependable as it was when the car was new."

DOLE

DRAFT DEFLECTORS

Insure perfect ventilation.
(No drafts; No dust)

Add a note of distinction to any automobile.

APPROVED, RECOMMENDED AND SOLD BY THIRTEEN (13) OF THE MOST PROMINENT AND SUCCESSFUL CAR MANUFACTURERS THROUGH THEIR ACCESSORY DEPARTMENTS.

Autumn is near—winter is on the way.

The public is buying new automobiles and reconditioning old ones.

The dangerous "frosted-window season" will soon be here and draft deflectors are becoming virtually a necessity for closed car comfort and safety.

Write today for full particulars.

THE DOLE VALVE COMPANY
1923 Carroll Ave., Chicago, Illinois

Also manufacturers of Dole Universal All-Tube Coupling, Double Compression Couplings, Dole Thermostats, Dole Primers

Dole
DRAFT DEFLECTORS

Stop the Leak!

Profits on auto sales during the first half of the year often leak away during the final six months.

You can stop this leak with the profits that can be enjoyed through the sale of Super Oil Heators.

Our franchise offers an ideal solution, and one that your present organization is admirably suited to handle successfully.

We will send full particulars upon request, together with details of our special offer to auto dealers.

SUPER OIL HEATOR SALES COMPANY
Hartford, Conn.

You Sir— and every other Automobile Dealer

ARE ENTITLED *to* HEAR THESE 17 QUESTIONS • ANSWERED •

Following are 17 questions which vitally affect your business welfare as an automobile dealer. Every one of these questions has a direct bearing on how you shall run your business, whether you shall actually run it yourself, and how much money you shall make in doing so. You are entitled to hear these 17 questions answered before you sign any motor car franchise.

1—Will I be forced to compete against one or more dealers handling the same product, if there is not an ample potential market in my community or neighborhood to support more than one dealer? **2**—What is the governing factor in the number of cars that will be shipped to me from the factory . . . and will my ability to sell used cars be considered in establishing my shipping quota? **3**—How are the factory's production schedules established? **4**—How large a new car stock will I be required to maintain? **5**—How important does the factory consider satisfactory profit to *myself* in measuring my success as a dealer? **6**—In event of model changes will I be protected against loss on new cars in my stock at time of change. **7**—Will I be protected against loss on new cars in my stock in the event of list price reductions? **8**—Will the factory assist me in the sale of *used* cars as well as new . . . and does the factory have a "junker fund" to aid in eliminating *undesirable* used cars from my stock? **9**—How about financial assistance in the wholesale purchase of new cars . . . and how attractive a plan can I offer my customers when they desire to purchase on time? **10**—Will the factory, *if I desire it*, offer me assistance in the form of a simplified system of record-keeping and accounting? Will the factory make available to me information comparing my operation to that of other dealers . . . to my practical advantage? **11**—Will the factory willingly assist me in holding down my expense to the lowest level consistent with good business? **12**—Will the new policies which the factory may introduce from time to time be drafted for the purpose of contributing to my continued profit from the franchise? **13**—Will the factory consider facts revealed by dealers' financial records in establishing *car, parts, and accessory discounts*, thereby assuring dealers a reasonable opportunity to make a profit? **14**—How about advertising—what will it cost me—what will I get for my money? **15**—Will I receive the benefits of a vigorous sales promotion campaign on the part of the factory? **16**—Will I receive assistance in developing my parts and service business at a profit? What is the nature of the assistance? **17**—What type of owner service policy will I be able to offer . . . and to what extent am I protected on parts and labor expense when adjustments are called for?

Oldsmobile answers every one of these questions fairly and squarely . . . in specific terms. If you're interested in the answers, as a progressive and qualified merchant, just fill out and mail the coupon below. All correspondence will be looked upon as between one automobile merchant and another.

Yes - I'd like the Answers !

Olds Motor Works, Lansing, Mich.

I'm waiting to receive my copy of the Oldsmobile booklet "A Good Dealer Deserves A Good Car, And A Good Car Deserves a Good Dealer" . . . outlining the 17 answers which Oldsmobile gives to the important questions on this page.

Firm Name_____

By_____

Street Address_____

City_____

OLDSMOBILE

PRODUCT OF GENERAL MOTORS

Production--Engineering--Factory

Automotive Engineering Shows Outstanding Progress

By JOHN A. C. WARNER
General Manager, Society of Automotive Engineers

A quick estimate of automotive engineering progress during the past twelve months reveals a number of minor improvements, minor refinements and unmistakable trends. In the passenger car field we find the most consistent attention being paid to transmissions, with quieter gears, free-wheeling and synchronization filling the important roles.

Of the many advantages that are claimed for these transmission developments, the element of easy and quiet shifting predominates. In fact, this item is undoubtedly one of the most widely accepted advantages that free-wheeling has to offer.

It is hoped that engineers will continue to concentrate their attention upon this vital element amidships, for it is anticipated that the completely automatic type of transmission will be the ultimate result.

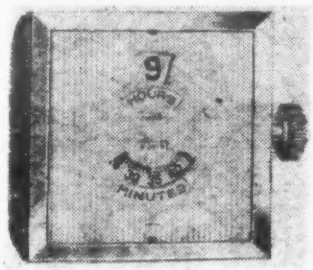
Power and performance have followed a steady rise, whereas improved methods in all branches have made it possible to reduce prices to the extent that the average cost has declined from $2,415 in 1925 to $1,947 in 1930. The eight-cylinder engine has increased in popularity until it surpasses the six from the standpoint of its application to the greatest number of models. Twelve and sixteen cylinder vehicles have entered the field in the higher priced brackets and have offered a degree of flexibility and quiet performance that has not hitherto been equaled.

Greater attention is continually being given to the matter of streamlining, the advantages of which are rather obvious when performance is considered. We are undoubtedly destined to witness an increase in streamlined designs, for they hold great promise as a simple method of increasing performance, as well as reducing body vibrations, whistles, oscillations and the like that are caused by impact of wind. In this connection considerable thought is being devoted to the possibility of engines being mounted over the rear axle, but acceptability of this scheme remains for the future to determine.

Rubber has been applied to additional uses and is now found as a most important element in engine mounting. In at least one case the engine is cradled in rubber, front and rear, the torque reaction being taken by a spring member.

(Continued on Page 37)

JAEGER JUMP HOUR CLOCK



JAEGER Jump Hour Clock

The Jaeger Watch Company, Inc., New York city, has just announced the addition to its line of a new eight-day automobile timepiece. This timepiece, known as the Jump Hour Clock, tells at a glance the exact time in hours and minutes, without requiring the customary figuring.

The Jump Hour Clock is available in either a dull nickel or chromium case, which is set off by a silver rippled dial. The case is so constructed that overhead installation above the windshield can be made.

ADAMS GREASE GUN DISPLAY BOARD

ADAMS display board for specialized lubrication

A new display board, the No. 110, featuring the various types of guns and indicating the proper lubricants for use in them for specialized lubrication service, has been introduced by Adams Grease Gun Corporation, New York city. Complete, the board is priced at $86.

CHEVROLET BUYING PLANT EQUIPMENT

Milwaukee, Wis., Aug 26.—The Oilgear Company has received an order for twenty-three broaching machines for the Toledo transmission plant of Chevrolet, according to S. M. Heller, secretary and treasurer. The order amounts to approximately $50,000.

WESTON ELECTRICAL CORP. REPORTS OPERATING PROFIT

Newark, N. J., Aug. 26.—The Weston Electrical Instrument Corporation for the six months ended June 30 reports net profit, including operations of the Jewell Electrical Instrument Company from June 18 to end of period after depreciation, Federal taxes and other charges, $70,656, equal to Class A stock dividends of 22 cents a share on common stock, compared with $448,884, equal under participating provisions of shares to $2.65 a share on Class A stock and $2.15 a share on common stock last year.

Use of Safety Glass Gains In Automobile Industry

By G. P. MacNICHOL, Jr.
Vice-president Libby-Owens-Ford Glass Company

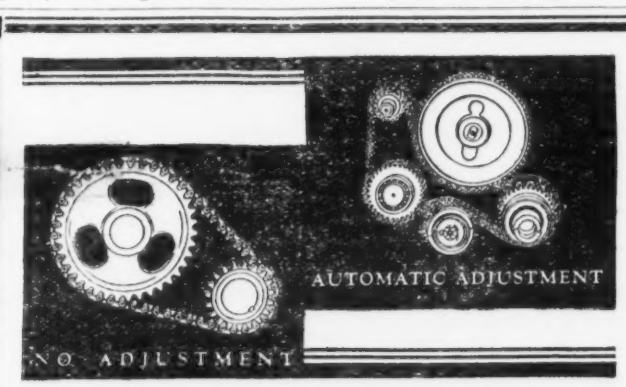
A PRACTICAL example of the safety provided by safety glass. The car, fully equipped with safety glass, was wrecked in transit in a freight car. A front wheel was torn off, the frame distorted, front axle bent, engine dismounted, pillar posts dislodged and roof crumpled

Safety glass, practically unknown in automobiles as recently as four years ago, is today used wholly or partially in more than one-half the cars produced in the United States.

While the production figures of other manufacturers, have not been made available to me, our own company has enjoyed a substantial increase in safety glass sales during the first seven months of 1931, as compared with the same period of 1930. The importance of this gain is emphasized when the reduction in retail sales of automobiles is considered.

As late as December, 1927, an analysis of the automobile industry set the number of cars then on the road, equipped with safety glass, at 5,000. The number was an outside figure and every one of the 5,000

(Continued on Page 38)

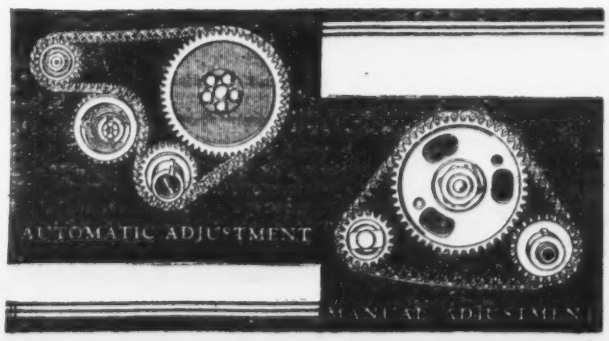


LINK-BELT
Automotive
SILENT CHAIN

WHETHER the most convenient and efficient layout calls for 2, 3, or more wheels, or for manual adjustment or automatic adjustment of chain tension, Link-Belt can furnish the type that suits the requirements best. Our engineers are at your service.

LINK-BELT COMPANY
INDIANAPOLIS - DETROIT

4373



THE
TOBY TRUCK

Attractive proposition for distributors and dealers. Exclusive franchise available for sale of the new Toby Truck. Manufactured by long-established truck manufacturing concern. Equipped with Continental Motors. Carries up to half ton. Has capacity 78 cu. ft. 60 inch wheel base. Weighs less than 1000 lbs. 50 miles per hour —40 miles per gallon.

LEE TOBIN COMPANY
GENERAL MOTORS BLDG., N. Y. CITY

Chevrolet believes in placing dealers *where they can make money*

Month after month, during 1931, Chevrolet has led all other makes of automobiles in national registrations.

Obviously, one reason for this lies in the car itself. Being a low-priced Six, with *built-in* six-cylinder smoothness, unsurpassed economy and many other great advantages—Chevrolet carries a wide popular appeal.

Still another important reason for Chevrolet's popularity lies in the sound, considerate methods used by the Chevrolet Motor Company in working with its dealers. This is particularly evident in Chevrolet's policy of appointing dealerships throughout the country.

Before deciding on the location of a new dealer point, the Chevrolet sales department makes a thorough analysis of the territory under consideration. Buying possibilities are weighed carefully and thoughtfully. Strict attention is paid to such factors as population—roads—wealth—geography—industries—and general economic conditions.

Dealers are assigned not to so many square miles of territory *but to so many potential buyers. And no dealer is placed at any point unless the Chevrolet Motor Company is fully satisfied that he can operate there at a profit.*

The value of such a policy, especially under present conditions, is easy to appreciate. Each Chevrolet dealer has adequate territory and an ample source of prospects to "work" successfully. Each has an equal opportunity to share in the great popular demand for the Great American Value.

CHEVROLET MOTOR COMPANY

CHEVROLET

FOR ECONOMICAL TRANSPORTATION

VISCOSITY A MEASURE OF LUBRICATING EFFICIENCY

(Continued from Page 18)

tain a sufficient film thickness and yet not create a drag on the motor from its own internal friction. When that ideal condition is attained, then the driver is obtaining the maximum in efficiency, he is minimizing the engine wear to its lowest possible limit, he is cutting his oil consumption to a minimum and also makes his motor noticeably smoother in performance.

Another interesting feature is that a driver may have an oil that is perfectly satisfactory for city driving, where he is not driving hard and only for short distances, but be entirely wrong for a hard drive of considerable speed and length. At this point you may ask, "Must I change my oil every time I change my driving condition?" The answer is "No," decidedly no, but adjust the viscosity (by adding, when bringing up the level, such a viscosity oil), so that it will meet the requirements under extreme conditions.

The reader has a perfect right to demand "Well, what is the use of stirring up all this excitement about viscosity and its control if we have no way of telling what viscosity we have while driving?" Some people have been able to gauge the oil viscosity in their motors by religiously watching the oil pressure gauge. It is known that the maximum pumping pressure of a pump decreases with a decrease in viscosity, but unfortunately, when the pump pressure has dropped any appreciable amount, the damage is already done. In other words, the oil pressure lags the condition so that the warning comes somewhat late.

What today's automobile needs is a device to indicate instantly to the driver the body of the oil he is using and, of course, at the crank case temperature, and so warn him if the oil has thinned out either by heat or dilution, to such an extent that it is dangerous for lubrication and also indicate when the oil is too heavy for circulation.

There is on the market now an instrument that is capable of doing exactly that. It gives the driver an indication of the viscosity condition as it actually is in the motor and the driver need no longer ask for information from any one, for he can pick the proper or suitable oil for his particular car and for the conditions he intends to use it. Above all, he can drive with peace of mind and know that his motor is being properly lubricated.

MATERIAL HANDLING

(Continued from Page 18)

belt, bucket, drag, pan, chain drag, overhead, reciprocating and feeder types. An overhead conveyor carries motors from the motor assembly to the final assembly, meeting the transmission on the way. The motor conveyor is 3,500 feet long and yet requires but four horsepower to keep it moving at the proper speed, due mainly to the balanced rise and fall of twenty feet between the motor plant and the final assembly.

Three conveyors are operated in the axle assembly, two in the motor assembly and one in the transmission assembly plant, with one conveyor for delivering axles to the final assembly. The final assembly consists of three lines. The foundry is, of course, completely conveyor equipped.

PLAN TO SPEND $200,000 TO REMODEL OLD PLANT

Buffalo, N. Y., Aug. 26.—The American Manganese Steel Company of Chicago has plans in progress for acquisition of the idle plant of the Electro Metals Company, Ltd., in Dennistown Street, Welland, Ont. Plans provide for expenditure of approximately $200,000 in remodeling the plant and installation of a large amount of new machinery and equipment. It is planned to utilize the Welland plant as a Canadian manufacturing unit of the Chicago organization.

MAJOR SPECIFICATIONS AND MECHANICAL DETAILS

Make and Model	Weight—5-P. Sedan	Wheel Base	Engine Make	Thermostat Used	Valve Arrangement	Cylinders	Bore and Stroke	Piston Disp.	Compression Ratio	Tax H. P.	Brake, H.P. and Peak R. P. M.	Pist. Make or Material	No. Main Br.	Oil Purifier	Fuel Cleaner	Carburetor	Air Cleaner
Auburn 8-98	3916	127-136	Lyc	Dole	L	8	3 x4¾	268	*5.26	28.8	98@3400	*Alum	5	Pur	—	Sch	No
Austin	§1130	75	Own	——	L	4	2.2x3	45.6	5.1	7.8	13@3000	Alum	2	—	—	Til	No
Buick 8-50	3170	114	Own	Bish-Bab	O	8	2⅞x4¼	220.7	4.75	26.45	77@3200	CI	5	AC	AC	Mar	AC
Buick 8-60	3795	118	Own	Bish-Bab	O	8	3 1/16x4⅝	272.6	4.63	30.02	90@3000	CI	5	AC	AC	Mar	AC
Buick 8-80	4255	124	Own	Bish-Bab	O	8	3 1/16x5	344.8	4.5	35.12	104@2800	CI	5	AC	AC	Mar	AC
Buick 8-90	4340	132	Own	Bish-Bab	O	8	3 1/16x5	344.8	4.5	35.12	104@2800	CI	5	AC	AC	Mar	AC
Cadillac V-8	4645	134	Own	Yes	LV	8	3⅜x4 1/16	353	5.35	36.45	95@3000	CI	3	AC	Gas	Own	No
Cadillac V-12	5480	140-143	Own	Own	O	12	3⅛x4	368	5.5	46.9	135@3400	CI	4	AC	Gas	Own	No
Cadillac V-16	6100	148	Own	Yes	O	16	3 x4	452.0	5.50	57.5	165@3400	CI	5	AC	Gas	Own	No
Chevrolet	2685	109	Own	No	O	6	3 3/16x3¾	194.0	5.00	26.3	50@2600	CI	3	—	AC	Car	AC
Chrysler 6	2850	*175⅞	Own	Yes	L	6	3¼x4⅜	217.8	5.35	25.35	70@3200	*Alum	4	—	AC	Sch	Yes
Chrysler 8	3365	*186 1/16	Own	Yes	L	8	3⅛x4¼	260.8	5.30	31.25	88@3400	*Alum	5	Yes	AC	Str	Yes
Chrysler 8 De L.	——	187 1/16	Own	Yes	L	8	3¼x4¼	282.1	5.20	33.80	94@3400	*Alum	5	Yes	Yes	Str	Yes
Chrysler Imp. 8	4725	*211	Own	Yes	L	8	3½x5	384.8	5.20	34.2	125@3200	*Alum	9	Yes	AC	Str	Yes
Cord (Fr. Wh. D.)	4620	137½	Lyc	——	L	8	3¼x4½	298.6	5.25	33.8	115@3300	*Alum	5	Pur	AC	Sch	No
De Soto Six	2695	*169 3/16	Own	Yes	L	6	3¼x4⅛	205.3	5.35	25.35	67@3200	*Alum	4	—	AC	Car	Yes
De Soto Eight	3025	*177	Own	Yes	L	8	2⅞x4¼	220.7	5.40	26.45	77@3400	*Alum	5	—	AC	Str	Yes
De Vaux 6-75	2810	113	Hall	Dole	L	6	3⅜x5	214.7	5.41	27.34	70@3400	Alum	4	AC	Ste	Til	AC
Dodge Six	2820	114¼	Own	Yes	L	6	3¼x4¼	211.5	5.20	25.35	68@3200	*Alum	4	No	AC	Car	AC
Dodge Eight	3174	118¼	Own	Yes	L	8	3 x4¼	240.3	5.40	28.80	84@3400	*Alum	5	Pur	AC	Str	AC
Durant 610	2780	112	Con	Bish-Bab	L	4	3⅞x4¼	200	4.80	24.0	50@2800	*Alum	3	AC	AC	Til	Til
Durant 612	2820	112	Con	Bish-Bab	L	6	3¼x4	199	5.32	25.4	71@3300	*Alum	4	AC	AC	Str	AC
Durant 614	3010	112	Con	Bish-Bab	L	6	3¼x4	199	5.32	25.4	71@3300	*Alum	4	AC	AC	Str	AC
Durant 619	2710	109	Con	Bish-Bab	L	6	3¼x4	199.0	5.32	25.4	71@3300	*Alum	4	AC	AC	Til	AC
Essex Super Six	2750	**113	Own	——	†L	6	2⅞x4½	175.3	5.80	19.8	60@3300	Alum	3	—	Ste	Mar	AC
Ford A	2375	103½	Own	——	L	4	3⅞x4¼	200.5	4.22	24.03	40@2200	Alum	3	—	—	Zen	—
Fr'klin S 15 Trans.	3930	125	Own	Bish-Bab	*O	6	3½x4⅜	274	5.30	29.4	100@3100	*Alum	7	AC	AC	Str	AC
Fr'klin S 15 Trans.	4130	132	Own	Bish-Bab	*O	6	3½x4¾	274	5.30	29.4	100@3100	*Alum	7	AC	AC	Str	AC
Fr'klin S 15 De L	4220	132	Own	Bish-Bab	*O	6	3½x4¾	274	5.30	29.4	100@3100	*Alum	7	AC	AC	Str	AC
Graham Bros. 6	3100	113	Own	Yes	L	6	3⅛x4½	207	5.45	23.4	70@3200	*Alum	7	—	AC	Sch	Yes
Graham Std. 6	3265	115	Own	Yes	L	6	3¼x4½	224	5.45	25.35	76@3400	*Alum	7	—	AC	DL	Yes
Graham Spl. 6	3330	115	Own	Yes	L	6	3¼x4½	224	5.45	25.35	76@3400	*Alum	7	—	AC	DL	Yes
Graham Spl. 8	3560	120	Own	Yes	L	8	3⅛x4	245	5.45	31.25	85@3400	*Alum	5	AC	AC	DL	Yes
Graham Cust. 8	4100	134	Own	Yes	L	8	3¼x4½	298	5.20	33.80	100@3400	*Alum	5	AC	AC	DL	Yes
Hudson Greater 8	3115	119-126	Own	Yes	L	8	2⅞x4½	233.7	5.80	26.4	87@3600	Alum	5	—	Ste	Mar	AC
Hupmobile Cen. 6	2985	114	Own	——	L	6	3¼x4¼	211.6	5.10	25.35	70@3200	Alum	4	AC	Ste	Str	Yes
Hupmobile Cen. 8	3275	118	Own	Pines	L	8	2⅞x4⅝	240.2	5.20	26.45	90@3200	Alum	5	Pur	Ste	Str	Yes
Hupmobile C	3730	121	Own	Pines	L	8	3 x4¾	268.6	5.20	28.8	100@3200	CI	5	Pur	Ste	Str	Yes
Hupmobile H & U	**	125-137	Own	Pines	L	8	3½x4¾	365.6	5.20	39.2	133@3400	Alum	5	Pur	Ste	Str	AM
La Salle V-8	4635	134	Own	Yes	LV	8	3⅜x4 1/16	353	5.35	36.45	95@3000	CI	3	AC	Gas	Own	—
Lincoln	5300	145	Own	Ful	L	8	3½x5	384	5.23	39.2	120@2900	Alum	5	Pur	Ste	Str	Un
Marmon 70	2823	112¾	Own	Pines	L	8	2 13/16x4¼	211.2	5.50	25.4	84@3400	Alum	5	AC	AC	Str	AC
Marmon 88	4275	130-136	Own	Pines	L	8	3¼x4¾	315.2	5.50	33.8	125@3400	Alum	5	AC	AC	Str	AC
Marmon 16	5360	145	Own	Pines	O	16	3⅛x4	490.8	6.00	62.5	200@3400	Alum	5	AC	AC	Str	AC
Nash 960	2800	114¼	Own	Bish-Bab	L	6	3⅛x4⅜	201.3	5.00	23.4	65@3200	*Alum	7	AC	AC	Car	AC
Nash 970	3000	116¼	Own	Bish-Bab	L	8	2⅞x4⅜	227.2	5.00	26.4	78@3300	*Alum	9	AC	AC	Str	AC
Nash 980	3360	121	Own	Bish-Bab	O	8	3 x4¼	240	5.25	28.8	94@3400	*Alum	9	AC	AC	Str	AC
Nash 990	4000	124-133	Own	Bish-Bab	O	8	3¼x4½	298.6	5.25	33.8	115@3600	*Alum	9	AC	AC	Str	AC
Oakland V-8	3260	117	Own	Yes	H	8	3 1/16x3⅝	251.0	5.00	37.8	85@3400	S St	3	—	AC	Mar	AC
Oldsmobile	2935	113½	Own	——	L	6	3 3/16x4⅛	197.5	5.06	24.4	65@3350	CI	4	AC	AC	Str	AC
Packard 901-902	4570	129½-136½	Own	Yes	L	8	3 3/16x5	320.0	6.00	32.5	110@3200	*Alum	9	Yes	Yes	Own	AC
Packard 903-904	5045	142⅛-147⅛	Own	Yes	L	8	3½x5	384.8	6.00	39.2	135@3200	*Alum	9	Yes	Yes	Own	AC
Peerless St. 8	3642	118	Con	Bish-Bab	L	8	2⅞x4¾	246.0	5.00	26.45	90@3200	*Alum	5	Pur	AC	Sch	AC
Peerless Master 8	4521	125	Con	Bish-Bab	L	8	3⅜x4½	322	5.00	36.45	115@3200	*Alum	5	Pur	AC	Sch	AC
Peerless De L.	4521	125	Con	Bish-Bab	L	8	3⅜x4½	322	5.00	36.45	115@3200	*Alum	5	Pur	AC	Sch	AC
Peerless Custom 8	4766	138	Con	Bish-Bab	L	8	3⅜x4½	322	5.00	36.45	120@3200	*Alum	5	Pur	AC	Sch	AC
Pierce-Arrow 43	4304	134-137	Own	Yes	L	8	3½x4¾	366	5.07	39.2	125@3000	*Alum	9	Han	AC	Str	Un
Pierce-Arrow 41-42	4831	142-147	Own	Yes	L	8	3½x5	385	5.07	39.2	132@3000	*Alum	9	Han	AC	Str	Han
Plymouth	2710	*170	Own	——	L	4	3⅝x4¾	196.1	4.90	21.03	56@2800	*Alum	3	—	AC	Car	Yes
Pontiac	2845	112	Own	Yes	L	6	3 1/16x3⅞	200.0	4.90	26.3	60@3000	S St	3	—	AC	Mar	AC
Reo Royale 8-35	4650	135	Own	Pines	L	8	3⅜x5	358	5.30	36.48	125@3300	Alum	9	Han	AC	Sch	Own
Reo Royale 8-31	4375	131	Own	Pines	L	8	3⅜x5	358	5.30	36.48	125@3300	Alum	9	Han	AC	Sch	Own
Reo 8-21	3610	121	Own	Yes	L	8	3 x4¾	268.6	5.37	28.8	90@3300	Alum	5	Han	—	Sch	Un
Reo 6-21	3525	121	Own	Yes	L	6	3⅜x5	268.3	5.30	27.3	85@3200	Alum	7	Han	—	Sch	Un
Reo Fly. Cloud 6-25	3950	125	Own	Pines	L	6	3⅜x5	268.0	5.30	27.34	85@3200	Alum	7	Han	V-S	Sch	Un
Reo 8-25	——	125	Own	Pines	L	8	3 x4¾	268.6	5.37	28.8	90@3300	*Alum	7	Han	V S	Sch	Un
Studebaker Six	2920	114	Own	Dole	L	6	3¼x4⅛	205.3	5.20	25.4	70@3200	CI	4	Pur	Ste	Str	No
Studebaker Dict. 8	3095	114	Own	Dole	L	8	3 1/16x3¾	221.0	5.00	30.0	81@3200	Alum	9	Pur	Ste	Str	AM
Studebaker Com. 8	3520	124	Own	Dole	L	8	3 1/16x4¼	250.4	5.20	30.0	101@3200	Alum	9	Pur	Ste	Str	Un
Studebak'r Pres 80	4250	130	Own	Dole	L	8	3½x4⅜	337	5.10	39.2	122@3200	*Alum	9	Han	Ste	Str	AM
Studebak'r Pres. 90	*4360	136	Own	Dole	L	8	3½x4⅜	337	5.10	39.2	122@3200	*Alum	9	Han	—	Str	AM
Stutz LA	4320	127½	Own	Bish-Bab	O	6	3⅜x4½	241.5	5.10	27.3	85@3150	*Alum	7	Wal	AC	Zen	Un
Stutz MA	4918	134½	Own	Bish-Bab	O	8	3⅜x4½	322	5.10	36.4	113@3300	*Alum	9	Wal	AC	Zen	AM
Stutz MB	4863	145	Own	Bish-Bab	O	8	3⅜x4½	322	5.10	36.4	113@3300	*Alum	9	Wal	AC	Zen	AM
Stutz DV 32	5240	134½	Own		O	8	3⅜x4½	322	5.10	36.4	155@3900	Alum	9	Wal	Ste	Sch	AM
Willys 6-97-98 D	*	110-113	Own	Var	L	6	3¼x3⅞	193	5.26	25.3	65@3400	CI	4	—	AC	Til	Til
Willys 8-80 D	3131	121	Own	Var	L	8	3⅛x4	245.4	5.26	31.25	80@3200	CI	5	—	AC	Til	Til
Willys-Knt. 66-D	3400	121	Own	Var	K	6	3⅜x4¾	255	5.26	27.3	87@3200	*Alum	7	Ski	Til	Til	Til
Willys-Knight 95	3122	113	Own	Pines	K	6	2 13/16x4⅜	177.9	5.55	20.7	60@3400	*Alum	7	*	AC	Til	AC

KEY TO ABBREVIATIONS

Weight—§Austin standard 2 passenger coupe. **Hupmobile model H weighs 4,095 pounds, and model U 4,360 pounds. *Studebaker, 7 pass sedan. *Willys 6-97D weighs 2,670 and the 98 D weighs 2,706 pounds.

Wheel Base—*Over all length of chassis instead of wheel base, which manufacturers refuse to give. **Essex, seven-passenger sedan available on 119-inch wheel base.

Engine Make—Con, Continental; Lyc, Lycoming, Hall, De Vaux-Hall Motors Corp.

Thermostat—Bish-Bab, Bishop & Babcock, Dole, Dole Valve Co., Chicago, Ill.; Ful Fulton Co.; Pines, Pines Winterfront; Var, various makes.

Valve Arrangement—L, L head; H, horizontal; O, overhead; K, sleeve valve; LV, V-type L head. *Air cooled. †Thermo syphon circulation.

Compression Ratio—*Optional on the Auburn.

Piston Material—*Alum, aluminum with invar struts; Alum, aluminum alloy; CI, cast iron; S St, semi-steel.

Oil Purifier—Pur, Purolator; Wal Wall; Han, Handy; AC, AC Spark Plug Company; Ste, Stewart-Warner; Ski, Skinner. *Using both Floato & Skinner.

Fuel Cleaner—AC, AC Spark Plug Co.; Gas Gascolator; Ste, Stewart-Warner; Til Tillotson; V-S, Van Sicklen.

Carburetor—Sch, Wheeler Schebler; Zen, Zenith; Mar, Marvel; Car, Carter; Str, Stromberg; DL Detroit Lubricator; Til, Tillotson.

Air Cleaner—AC, AC Spark Plug Company; AM, Air Maze; Han, Handy; Un United; Til, Tillotson.

Front End Drive—Link, Link Belt; Tex, Texolite; Cel, Celeron; Diam, Diamond Chain; Morse, Morse Chain Company; Var, various makes of chains; Var-G, various makes of gears.

Ignition, Generator and Starter—Aut-L, Auto-Lite; Del-R, Delco-Remy; Dyn, Owen-Dyneto Corp.; N E, North East. *Nash,—Indicates twin ignition. *Bendix starter used

Clutch—Borg, Borg & Beck; Br-L, Brown-Lipe; Rock, Rockford Machine; Long, Long Clutch Company; Rus, Russell Mfg. Co.

Transmission Make—D, Detroit Gear; WG, Warner Gear Company; M, Muncie Gear Company; O, Own; N, New Process Gear Corp.; W, Warner Corp. *Franklin Transcontinent models are equipped with both Warner and Detroit 3 or 4 speed gear sets, according to body type.

Transmission Type—DG, Detroit Gear & Machine Co.; LGS, The LGS Corp.; F, Free Wheeling; SM, Synchro Mesh; BW, Borg-Warner; NP—New Process Gear Corp.

Universals—U, Detroit Universal Products; S, Spicer Mfg. Corp.; O, Own; M, Mechanics Universal Joint Company.

Rear Axle—Col, Columbia; Sal, Salisbury; Tim Timken; N.P., New Process Gear Corp.; ½-Semi-floating; ¾-¾ floating; F-Full floating.

Ratio—Optional on the Auburn. *On Pierce Arrow 43, 137 in W. B. rear axle ratio is 4.42. On model 41 rear axle ratio is 4.42. On model 42 ratio is 4.23. †The axle ratio varies with body types on Franklin models.

Brakes—H, hydraulic; M, mechanical; SD, steeldraulic; Bendix, Bendix Brake Corp.

Steering Gear—Gem, Gemmer; Ross, Ross Gear and Tool Company; Sag, Saginaw; Say-B, Saylor-Beall Manufacturing Company; War, Warner; N.P., New Process Gear Corp.

Rear Springs—S, semi-elliptic; E, full elliptic; Cant, semi-cantilever; S-Tr, semi-transverse. *Rear spring length on Willys, 6-98D is 51 in.

Spring Shackles—Tryon, Willys-Morrow Company; Rub B, Rubber Shock Insulator Company; Fal, Fafnir Bearing Company; ERS, Eaton Rubber Bushings; Inlox—Inland Mfg. Co.

Chassis Lubricator—Alem, Alemite; Al-Z, Alemite Zerk; Bijur, Bijur Lubricating Corp.; Far, Farval.

MID-SOUTH FAIR TO HAVE AUTOMOBILE SHOW

Memphis, Tenn., Aug. 26.—Every make of automobile sold in Memphis will be represented in the automobile show to be held in conjunction with the Mid-South Fair the week starting September 27.

Jeff Hicks, president of the Memphis Automobile Dealers Association, named Hugh J. Jetton, Robert Chambers and R. R. Price a committee to arrange details of the show.

BUYS SERVICE STATION

Little Ferry, N. J., Aug. 26.—The Central Service Station, owned and operated by John Thomson, at Main and Liberty Streets, has been sold to A. H. Molke of North Bergen. The purchase price included all stock, fixtures, leasehold rights and good will of the business.

OF PRESENT AMERICAN PASSENGER CAR MODELS

Make and Model	Front End Drive	Ignition System	Gen. and Starter	Clutch	Transmission Make	Transmission Speeds	Transmission Type	Universals	Rear Axle Ratio	Brakes	Steering Gear	Spring Rear	Springs Shackles	Chassis Lubric.	Tires
Auburn 8-98	Chain	Del-R	*Del-R	Long	D	3	LGS-F-SM	U	Col ½	*4.45	S D	Ross	S 56¾	Own	Bijur	17x5.50
Austin	Gear	Aut-L	*Aut-L	Rock	WG	3	——	S	Sal ½	5.25	M	Say-B	Cant	Own	Al-Z	18x3.75
Buick 8-50	Tex	Del-R	Del-R	Own	M	3	SM	O	Own ½	4.54	Bendix	Sag	S 54½	Tryon	Al-Z	18x5.25
Buick 8-60	Tex	Del-R	Del-R	Own	O	3	SM	O	Own ¾	4.45	M	Sag	S 55¼	Own	Alem	19x5.50
Buick 8-80	Tex	Del-R	Del-R	Own	O	3	SM	O	Own ¾	4.27	M	Sag	S 58⅞	Own	Al-Z	19x6.50
Buick 8-90	Tex	Del-R	Del-R	Own	O	3	SM	O	Own ¾	4.27	M	Sag	S 58⅞	Own	Al-Z	19x6.50
Cadillac V-8	Morse	Del-R	Del-R	Own	O	3	SM	S	Own ¾	4.75	Own-M	Sag	S 58	Own	Al-Z	19x6.50
Cadillac V-12	Morse	Del-R	Del-R	Own	O	3	SM	S	Own ¾	——	Own-M	Sag	S 58	Own	Alem	19x7.00
Cadillac V-16	Morse	Del-R	Del-R	Own	O	3	SM	S	Own ¾	4.39	Own	Sag	S 60	Own	Alem	19x7.00
Chevrolet	Var	Del-R	*Del-R	Own	O	3	——	O	Own	4.10	M	Sag	S 54	——	Alem	19x4.75
Chrysler 6	Morse	Del-R	Del-R	Borg	O	3	BW-F	U	Own ½	4.60	H	War	S 53⅛	Tryon	Al-Z	19x5.25
Chrysler 8	Morse	Del-R	Del-R	Borg	O	4	BW-F	—	Own ½	4.10	H	War	S 54⅝	——	Al-Z	17x7.50
Chrysler 8 De L.	Morse	Del-R	Del-R	Borg	O	4	BW-F	—	Own ½	4.30	H	——	S 54⅝	——	Al-Z	17x6.50
Chrysler Imperial 8	Morse	Del-R	Del-R	Borg	O	4	BW-F	—	Own ½	3.81	H	Ross	S 57½	——	Al-Z	18x7.00
Cord (Fr. Wh. Dr.)	Link	Del-R	*Del-R	Long	D	3	——	*	Col F	4.80	H	Gem	S 62	Own	Bijur	18x7.00
De Soto Six	Var	Del-R	Del-R	Borg	O	3	BW-F	—	Own ½	4.33	H	Own	S 53⅛	——	Al-Z	19x5.00
De Soto Eight	Var	Del-R	Del-R	Borg	O	3	BW-F	—	Own ½	4.60	H	Own	S 54⅝	Rub B	Al-Z	19x5.25
De Vaux 6-75	Morse	Aut-L	*Aut-L	Borg	N	3	NP-F	S	NP ½	4.40	S D	NP	S 54¼	Tryon	Al-Z	19x5.00
Dodge Six	Morse	Del-R	Del-R	Borg	O	3	BW-F	S	Own ½	4.60	H	War	S 55¼	Tryon	Al-Z	19x5.00
Dodge Eight	Morse	Del-R	Del-R	Borg	O	3	BW-F	S	Own ½	4.60	H	War	S 54⅝	Rub B	Al-Z	18x5.50
Durant 610	Morse	Aut-L	*Aut-L	Borg	W	3	——	S	Own ½	3.96	S D	Own	S 55	Tryon	Al-Z	19x5.00
Durant 612	Morse	Aut-L	*Aut-L	Borg	W	3	——	S	Own ½	4.45	S D	Own	S 55	Tryon	Al-Z	19x5.00
Durant 614	Morse	Aut-L	*Aut-L	Borg	W	3	——	S	Own ½	4.45	S D	Own	S 55	Tryon	Al-Z	19x5.00
Durant 619	Morse	Aut-L	*Aut-L	Borg	W	3	——	S	Own ½	3.90	S D	Own	S 54	Tryon	Al-Z	19x4.75
Essex Super Six	Morse	Aut-L	*Aut-L	Own	O	3	BW-F	S	Own ½	5.40	Bendix	Gem	S 54⅛	Own	Alem	19x5.00
Ford A	Var	Own	*Own	Own	O	3	——	O	Own ¾	3.78	M	Gem	S Tr39	Own	Al-Z	19x4.75
Franklin S 15 Trans.	Chain	Del-R	*Del-R	Br-L	*	—	——	M	Own ½	‡4.54	H	Gem	El 42	None	Al-Z	19x6.50
Franklin S 15 Trans.	Chain	Del-R	*Del-R	Br-L	*	—	——	M	Own ½	‡4.54	H	Gem	El 42	None	Al-Z	19x6.50
Franklin S 15 De L	Chain	Del-R	*Del-R	Br-L	WG	3	——	S	Own ½	‡4.73	H	Gem	El 42	None	Al-Z	19x6.50
Graham Pros. 6	Link	Del-R	*Del-R	Long	—	3	BW-F	—	——	4.45	H	Ross	S 54	ERS	Al-Z	19x5.00
Graham Std. 6	Link	Del-R	*Del-R	Long	—	3	BW-F	—	——	4.30	H	Ross	S 54	ERS	Al-Z	5.50x18
Graham Spl. 6	Link	Del-R	*Del-R	Long	—	4	BW-F	—	——	4.09	H	Ross	S 54	ERS	Al-Z	6.00x17
Graham Spl. 8	Link	Del-R	*Del-R	Long	—	4	BW-F	—	——	4.09	H	Ross	S 54	ERS	Al-Z	6.00x17
Graham Cust. 8	Link	Del-R	*Del-R	Long	—	4	BW-F	—	——	4.09	H	Ross	S 56	ERS	Al-Z	6.50x18
Hudson Greater 8	Morse	Aut-L	*Aut-L	Own	O	3	BW-F	S	Own ½	4.75	Bendix	Gem	S 54⅛	Own	Alem	18x5.50
Hupmobile Cen 6	Chain	Aut-L	*Aut-L	Borg	WG	3	BW-F	M	Sal ½	4.70	S D	Ross	S 53	Tryon	Al-Z	19x5.50
Hupmobile Cen 8	Morse	Aut-L	*Aut-L	Borg	WG	3	BW-F	U	Sal	4.55	S D	Ross	S 52¾	Rub B	Al-Z	19x5.50
Hupmobile C	Morse	Aut-L	*Aut-L	Long	WG	3	BW-F	U	Own ½	4.55	S D	Ross	S 54	Own	Alem	19x6.00
Hupmobile H and U	Morse	Aut-L	*Aut-L	Long	WG	3	BW-F	U	Own ½	4.07	S D	Ross	S 57	Own	Alem	19x6.50
La Salle V-8	Morse	Del-R	Del-R	Own	O	3	SM	S	Own ¾	4.75	Own-M	Sag	S 58	Own	Alem	19x6.50
Lincoln	——	Aut-L	*Aut-L	Long	O	3	BW-F	S	Tim F	4.58	Bendix	Own	S 62	Own	Alem	7.00x19
Marmon 70	Diam	Del-R	*Del-R	Rock	WG	3	BW-F	S	Sal ½	4.70	Bendix	Ross	S 54½	Tryon	Al-Z	29x5.50
Marmon 88	Diam	Del-R	*Del-R	Rus	D	3	BW-F	S	Sal ½	4.45	Bendix	Ross	S 60	Rub B	Al-Z	19x6.50
Marmon 16	Diam	Del-R	Del-R	Rus	M	—	BW-F	S	Sal ½	3.78	Bendix	Ross	S 60	Rub B	Al-Z	18x7.00
Nash 960	Cel	Aut-L	*Aut-L	Borg	O	3	DG-F-SM		Own ½	4.73	M	Ross	S 50⅞	——	Alem	19x5.00
Nash 970	Diam	Aut-L	*Aut-L	Borg	O	3	DG-F-SM		Own ½	4.73	M	Ross	S 50⅞	——	Alem	19x5.25
Nash 980	Diam	*Aut-L	*Aut-L	Borg	O	3	DG-F-SM		Own ½	4.46	M	Gem	S 55	——	Bijur	18x6.00
Nash 990	Diam	*Aut-L	*Aut-L	Borg	O	3	DG-F-SM		Own ½	4.50	M	Gem	S 57⅛	——	Bijur	19x6.50
Oakland V-8	Morse	Del-R	Del-R	Own	M	3	SM	M	Own ½	3.90	M	Sag	S 54½	Inlox	Al-Z	28x5.50
Oldsmobile	Chain	Del-R	Del-R	Borg	M	3	SM	U	Own ½	4.54	Bendix	Sag	S 54½	Tryon	Alem	28x5.25
Packard 901-902	Morse	N E	Dyn	Long	O	4	SM	M	Own ½	4.66	M	Own	S 60½	Own	Bijur	6.50x19
Packard 903-904	Morse	N E	Dyn	Long	O	4	SM	M	Own ½	4.66	M	Own	S 60½	Own	Bijur	7.00x19
Peerless St. 8	Morse	Aut-L	*Aut-L	Rock	WG	3	BW-F	S	Sal ½	4.70	Bendix	Ross	S 56⅛	Rub B	Alem	29x5.50
Peerless Master 8	Morse	Aut-L	*Aut-L	Rock	WG	3	BW-F	S	Sal ½	4.45	Bendix	Ross	S 60	Rub B	Alem	31x6.00
Peerless De L.	Morse	Aut-L	*Aut-L	Rock	WG	3	BW-F	S	Sal ½	4.45	Bendix	Ross	S 60	Rub B	Alem	31x6.00
Peerless Custom 8	Morse	Aut-L	*Aut-L	Rock	WG	3	BW-F	S	Sal ½	4.45	Bendix	Ross	S 60	Rub B	Alem	31x6.50
Pierce-Arrow 43	Gear	Del-R	Del-R	Long	O	3	BW-F	S	Own ½	4.08	Bendix	Ross	S 60	Faf	Al-Z	19x6.50
Pierce-Arrow 41-42	Chain	Del-R	Del-R	Long	O	3	BW-F	S	Own ½	*	Bendix	Ross	S 61	Faf	Al-Z	18x7.00
Plymouth	Var	Del-R	Del-R	Borg	O	3	BW-F	O	Own ½	4.33	H	War	S 53⅜	Tryon	Al-Z	19x4.75
Pontiac	Morse	Del-R	Del-R	Own	O	3	——	M	Own ½	3.90	M	Sag	S 54	Inlox	Al-Z	29x5.00
Reo Royale 8-35	Morse	Del-R	Del-R	Long	O	3	SM	U	Own ½	4.07	H	Ross	S 57½	Tryon	Far	6.50x18
Reo Royale 8-31	Morse	Del-R	Del-R	Long	O	3	SM	U	Own ½	4.07	H	Ross	S 57½	Tryon	Al-Z	6.50x18
Reo 8-21	Link	Del-R	Del-R	Long	O	3	SM	U	Own	4.42	H	Ross	S 56⅛	Tryon	Al-Z	17x6.00
Reo 6-21	Morse	Del-R	Del-R	Long	O	3	SM	U	Own	4.07	H	Ross	S 56⅛	Tryon	Al-Z	17x6.00
Reo Fly. Cloud 6-25	Morse	Del-R	*Del-R	Long	O	3	SM	U	Own ½	4.42	H	Ross	S 55⅜	Tryon	Al-Z	17x6.50
Reo 8-25	Morse	Del-R	*Del-R	Long	O	3	SM	U	Own ½	4.42	H	Ross	S 55¾	Tryon	Al-Z	17x6.50
Studebaker Six	Chain	Del-R	*Del-R	Long	O	3	BW-F	S	Own ½	4.73	Bendix	Ross	S 54	Tryon	Alem	19x5.25
Studebaker Dict. 8	Var G	Del-R	*Del-R	Long	O	3	BW-F	S	Own ½	4.73	Bendix	Ross	S 54	Tryon	Alem	19x5.25
Studebaker Com. 8	Var G	Del-R	*Del-R	Long	O	3	BW-F	S	Own ½	4.73	Bendix	Ross	S 56	Faf	Al-Z	19x6.00
Studebaker Pres. 80	Var G	Del-R	Del-R	Long	O	3	BW-F	S	Own ½	4.31	Bendix	Ross	S 60	Faf	Al-Z	19x6.50
Studebaker Pres. 90	Var G	Del-R	Del-R	Long	O	3	BW-F	S	Own ½	4.31	Bendix	Ross	S 60	Faf	Al-Z	19x6.50
Stutz LA	——	Del-R	Del-R	Borg	D	4	——	U	Sal ½	4.75	H	Gem	S 60	Own	Bijur	19x6.00
Stutz MA	——	Del-R	Del-R	Long	D	4	——	M	Tim ½	4.75	H	Gem	S 62¼	Own	Bijur	20x6.50
Stutz MB	——	Del-R	Del-R	Long	D	4	——	M	Tim ½	4.75	H	Gem	S 62¼	Own	Bijur	20x7.00
Stutz DV 32	——	Del-R	Del-R	Long	D	4	——	M	Tim ½	4.75	H	Gem	S 62¼	Own	Bijur	18x7.00
Willys 6-97-98 D	Chain	Aut-L	*Aut-L	Borg	O	3	BW-F	S	Own ½	4.60	Bendix	Own	*S 49¾	Tryon	Alem	19x5.00
Willys 8-80 D	Chain	Aut-L	*Aut-L	Borg	O	3	BW-F	S	Own ½	4.40	Bendix	Ross	S 56	Tryon	Alem	18x5.50
Willys-Knight 66 D	Chain	Aut-L	*Aut-L	Rock	O	3	BW-F	S	Own ½	4.18	Bendix	Ross	S 56	Tryon	Alem	18x6.00
Willys-Knight 95	Chain	Aut-L	Aut-L	Borg	O	3	BW-F	S	Own ½	4.89	Bendix	Gem	S 51	Tryon	Alem	19x5.00

Urges Factory to Control Used Car Business

(Continued from Page 4)

and the central bureau dies for lack of support. That isn't just a theory of mine; it has been tried time and again, and it never has worked for long.

What method can we use to cure this used car evil? I agree with one of your readers who had a letter in The Automotive Daily News a couple of months ago. The manufacturers will have to step in and cure the cancer by cutting it out. They will have to take the whole used car end of the business out of the new car field.

This may seem like a tremendous job, but it isn't as big as some that the industry has tackled. If all the manufacturers would join to remove the used car business from their dealers' shops, the cost, divided up, would not be as much as might be thought. It would certainly be less costly than letting the whole dealer organization melt away—and that is what's going to happen if the factories do not take hold.

Would it be cheaper for the manufacturers to join in forming central bureaus for the handling of used cars in central locations, serving carefully laid out territories, or to have to devise some other method of marketing new cars by branches in every town and city? You don't have to be a Sherlock Holmes to guess the answer to that one.

I'm not a pessimist. I believe the automobile dealer will come through O. K. He is performing a logical function in the distributing system. He can do a better job than factory branches; that has been proved time and again. But there is no use sticking our heads in the sand, as ostriches are supposed to do. We had better face the facts and find the cure. The automobile dealers of this country are a sick lot of pups, and the disease is indigestion, caused by used cars. They haven't been able to cure themselves, and it is time that old Doctor Factory stepped in and gave them a dose of medicine.

Let's have some more letters from dealer readers of Automotive Daily News on this subject. I have read every one that has been published, and wished for more. If any dealer has a real cure for the used-car evil, in heaven's name let's hear it. There are fifty thousand more like me who will listen until the cows come home to any such idea.

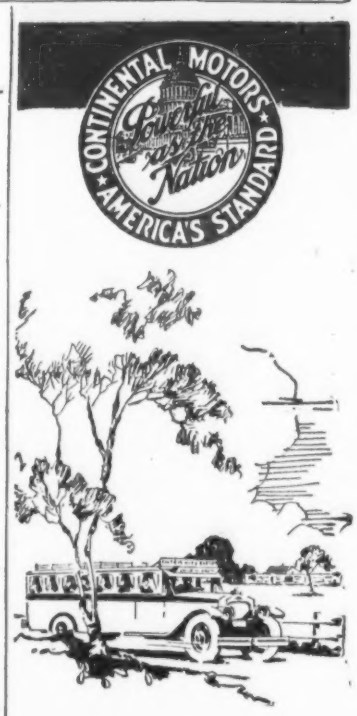
Yours for better times,
A PIONEER A. D. N.
DEALER-READER.

PLANS NEW BUILDING

Trenton, N. J., Aug. 26.—George H. Royle has awarded a contract for the construction of an automobile sales and show room on Barnes Street near West Hanover Street. The structure will be 60x85 feet in size and of the one-story type. Brick, block and steel will be used in the building. Buildings occupying the site for some years have been razed.

CHEVROLET FIRM FORMED

Charlotte, N. C., Aug. 26.—A charter has been issued to the Bibgy Chevrolet Company of Pickens, S. C. J. F. Bibgy is president and treasurer and Emma Bibgy is vice-president and secretary.



Stability

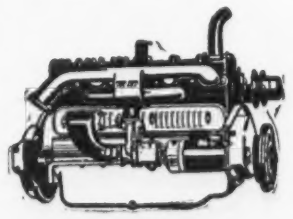
Continental's position in the automotive field—built up over a period of 30 years—is absolutely stabilized by two important factors—

The confidence with which 241 manufacturers in 25 different countries buy Continental engines—a confidence bred of Continental's responsibility to the manufacturer—and

The tremendous facilities and resources that have made Continental the gasoline engine proving ground of the world.

CONTINENTAL MOTORS CORPORATION

Offices: Detroit, Michigan, U. S. A.
Factories: Detroit and Muskegon



Continental Engines

Motor Industry Improving In Indiana Despite New Low Levels of Other Industries

INDIANAPOLIS, Ind., Aug. 26.—**Although Indiana business and industry last month hit a new low level for the current depression, according to the Indiana Business Review, published by the Fletcher American National Bank, automobile sales and the labor situation in some sections showed improvement over the previous month.**

Revised general business index for May was given as 77.5 and 69.1 for June, comparing with the preliminary figure of 68.4 for the month of July.

Steel ingot production in the Indiana-Illinois district continued at about 30 per cent. capacity, the review stated. Pig iron production in the district made more than the seasonal decline to a point 62.4 per cent. under the theoretical normal. Moving against an established seasonal trend, building stone shipments gained in the Bedford-Bloomington district to a point 33.5 per cent. under normal.

Automobile production was found continuing the decline which was begun in May. Manufacturers of auto parts and accessories reported normal seasonal decline in output. Preliminary reports indicated that coal production again made more than normal seasonal decline. Furniture production during the first six months was 23.9 per cent. under a year ago and 46.4 per cent. under the corresponding period of 1929. Prices for farm products continued to descend.

Improvement in employment was found at Fort Wayne, where several factories operated on steadier schedules. Kokomo likewise reported industrial gains, with conditions about 15 per cent. upward and employment situation much better. Plymouth, a smaller industrial center in the northern part of the state, reported similar trends.

New car sales for the month in the state, the review states, gained slightly over June and, trade association figures reveal, while the total for July showed a loss of about 350 cars, actual dollar volume of business appeared to have made an increase, inasmuch as the list excluding Ford gained about 800 units. This difference was taken up chiefly by Chevrolet and Plymouth, which gained about 500 cars between them, the remainder being absorbed by various lines in the $1,000 and under field.

General retail business was found to have followed the established season trend in both sales and employment, while farm employment showed a high figure, with grain and fruit crops reaching bumper proportions and requiring more help in handling than last year, when the state was in the grip of the drought.

Wheat crops were reported far above normal, although late oats suffered from the intense heat. Corn conditions were much better than in any year since 1926, with fruit prospects excellent.

A great deal of hope for fall business, both in the automobile selling field and other lines, is being placed in the crop condition. Even at low prices it is felt farm produce will be responsible for the placing in circulation of a large amount of surplus cash, which will immediately find its way into other lines of business.

OCT. 24 DEFINITELY SET FOR NEW HUDSON RIVER BRIDGE DEDICATION

Fort Lee, N. J., Aug. 26.—Dedication of the new George Washington Bridge over the Hudson River will take place on Saturday afternoon, October 24, with ceremonies of an appropriately elaborate nature.

This is announced by the Port of New York Authority, following receipt of word that Charles Curtis, vice-president of the United States, has indicated his acceptance of an invitation to participate.

The program will be divided into several parts, with the vice-president and the governors of the two states speaking from a point on the span midway between Manhattan and Fort Lee. The celebration will have a military flavor and the navy will probably be requested to assist also in making the event a colorful and memorable one.

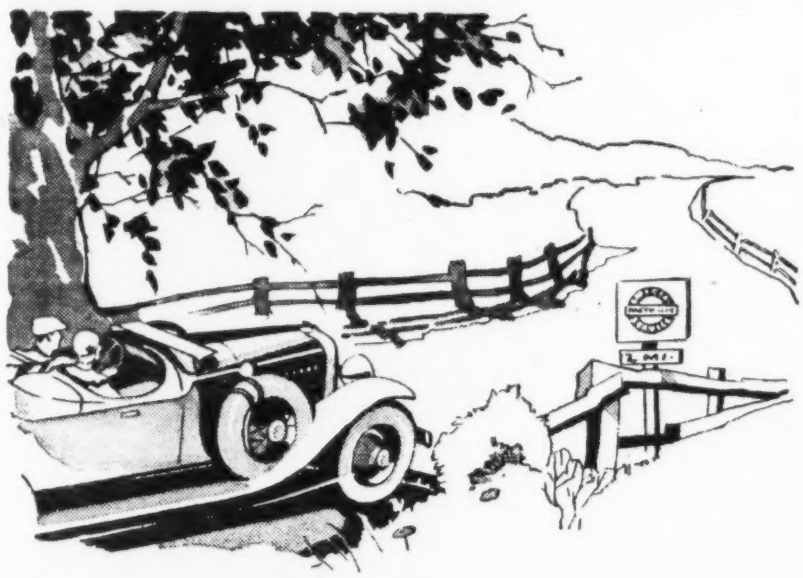
Civic organizations in both states will have a place in the ceremonies, particularly in the direction of exercises at either end of the bridge. The bridge actually may be opened to traffic the following day, Sunday, October 25, which is several months in advance of the original schedule.

GETS STATE CHARTER

Latta, S. C., Aug. 26.—F. & H. Chevrolet Company has just been granted a state charter. Officers of the new corporation are: L. B. Hyman, president; T. F. Hyman, vice-president, secretary and treasurer.

Foreign Sales of American Motor Vehicles

	PASSENGER CARS				MOTOR TRUCKS				CARS AND TRUCKS COMBINED			
1930—	U. S. Exports	U. S. Foreign Assem.	Canada Output	Total	U. S. Exports	U. S. Foreign Assem.	Canada Output	Total	U. S. Exports	U. S. Foreign Assem.	Canada Output	Total
January	15,653	7,100	8,856	31,609	12,995	5,755	1,532	20,282	28,648	12,855	10,388	51,891
February	19,336	5,700	13,021	38,057	6,837	4,651	2,527	14,015	26,173	10,351	15,548	52,072
March	22,892	7,900	17,165	47,957	9,073	6,504	3,565	19,142	31,965	14,404	20,730	67,099
April	24,416	9,400	20,872	54,688	11,553	7,783	3,385	22,721	35,969	17,183	24,257	77,409
May	17,325	10,500	21,251	49,076	9,759	8,553	3,421	21,733	27,084	19,053	24,672	70,809
June	10,565	8,700	12,194	31,459	5,415	7,101	2,896	15,412	15,980	15,801	15,090	46,871
Six months	110,187	49,300	93,359	252,846	55,632	40,347	17,326	113,305	165,819	89,647	110,685	366,151
July	8,291	8,400	8,556	25,247	4,138	6,841	1,632	12,611	12,429	15,241	10,188	37,858
August	8,550	6,100	6,946	21,596	5,401	5,021	2,846	13,268	13,951	11,121	9,792	34,864
September	8,659	6,800	5,623	21,082	5,373	5,614	2,334	13,321	14,032	12,414	7,957	34,403
October	7,592	6,600	3,206	17,398	4,139	5,394	1,335	10,868	11,731	11,994	4,541	28,266
November	6,434	5,500	3,527	15,461	5,753	4,432	1,880	12,065	12,187	9,932	5,407	27,526
December	9,751	5,200	4,225	19,176	5,266	4,300	1,397	10,963	15,017	9,500	5,622	30,139
Six months	49,277	38,600	32,083	119,960	30,070	31,602	11,424	73,096	79,347	70,202	43,507	193,056
Year	159,464	87,900	125,442	372,806	85,702	71,949	28,750	186,401	245,166	159,849	154,192	559,207
1931—												
January	8,577	5,583	4,552	18,712	4,664	4,386	1,944	10,994	13,241	9,969	6,496	29,706
February	9,602	5,154	7,529	22,285	4,349	4,190	2,342	10,881	13,951	9,344	9,871	33,166
March	12,047	7,534	10,483	30,064	6,156	6,144	2,510	14,810	18,203	13,678	12,993	44,874
April	11,621	6,742	14,043	32,406	5,713	6,946	3,116	15,775	17,334	13,688	17,159	48,181
May	9,006	8,015	10,621	27,642	4,636	3,652	2,117	10,405	13,642	11,667	12,738	38,047
June	6,285	4,515	5,583	16,383	4,465	6,540	1,252	12,257	10,750	11,055	6,835	28,640
Six months	57,138	37,543	52,811	147,492	29,983	31,858	13,281	75,122	87,121	69,401	66,092	222,614



You are always near an AUTO-LITE service station

• Auto-Lite is the world's largest builder of automotive electrical systems—and has a most extensive network of service stations. Whether you are motoring in the Black Hills of South Dakota or across the Arizona desert, you can be sure of efficient service for your Auto-Lite equipped car wherever and whenever you need it. This is one feature greatly responsible for the popularity of Auto-Lite equipped cars. Even more important to motorists is the high quality and dependability of Auto-Lite equipment. For twenty years Auto-Lite has been building only the finest, most dependable electrical starting, lighting and ignition systems. Which is the explanation of the fact that Auto-Lite is the world's largest builder of starting, lighting and ignition systems. The Electric Auto-Lite Company, Toledo, Ohio.

OFFICIAL AUTOLITE SERVICE

The sign of Auto-Lite Service—a nation-wide protection to car and truck owners.

Auto-Lite

Starting, Lighting & Ignition

Mulch Sees Dealer Liquidation at End

(Continued from Page 3)

the inflation period that a large number of dealers and distributors, carried away as they were by prosperous times, enlarged their places and built up an overhead which was in keeping with those times, but could withstand but little deflation. The result was that when the deflation period appearcd on the scene they were able to reduce their expenditures in part. Those dealers who had sufficient capital to carry themselves along have been able to keep going—others who had not built up a necessary reserve were forced to the wall.

There has been and is going on among dealers today a considerable shifting around. A goodly number of large dealers have gone out of business due to terrific overhead, and these men have been replaced by the smaller dealer, who heretofore had not had the opportunity to build himself up into a large concern. These men were, unquestionably, lying back for the opportunity to present itself such as the present time. With a nominal capital and a small reserve they were in a much stronger position than heretofore, and, in fact, in a much better position than the large dealers. They were, therefore, able to take advantage of low leasing and of the ability to obtain attractive lines. Their system of operation has always been conservative, and these men were slowly graduating into the major league, as it were, and will be the men with whom the factories will deal in the future.

The dealers who are surviving are, in my opinion, in a very advantageous position. They are able, through a combination of circumstances, to obtain the finest talent in the industry at a very low wage scale and are able to either renew their leases or obtain leases far under the prices existing two years ago. Business is more difficult to get, but these men, backed up by lower overhead and a much more efficient organization, are in much better position to obtain business than they were even before the days of deflation.

Unfortunately, the number of dealers who have fallen by the wayside has been very heavy, but there is no question but the liquidation of these dealers has about reached its limit, and the smaller, well-organized dealer above mentioned is coming to the front very rapidly, so that, as far as the industry is concerned, this passing out of one set of dealers and the building up of another set of dealers is taking place very rapidly. This, of course, will insure the stability of the motor car industry.

A solution for dealers in general for the coming period is to revamp their organizations, obtaining the best men in the market today in all positions, to keep away from the elaborate, overgrown showrooms and service buildings, and to take advantage of the present low rentals, obtaining long leases on same.

If a distributor would endeavor to build up his community dealers both as to sales and service the need of an overgrown establishment would be unnecessary in larger cities. The honest building up of the community dealers will perhaps decrease the distributor's retail business, but will increase his wholesale business, and, at the same time, enable him to stand almost any kind of deflation period.

BUSINESS OPERATIONS ON BETTER BASIS

By R. S. COLE, JR.,
Vice-President Hupp Motor Car Corporation

In view of dealer mortality in the past eighteen months, I am of the opinion that dealers who have remained in business have certainly put their business operations on a far better basis than they have been in the past.

Although the volume of sales has been much smaller, unnecessary overhead has been cut out, rents have been reduced and they have therefore been able to survive on a much smaller volume.

In addition to this, in view of the fact that cars are not being traded in as frequently as in the past, the aggressive dealer has been able to materially increase his income by energetically going after service work, etc.

With the gradual improvement in business, which we naturally expect will take place, there is no question that dealers who are going through this trying period will have the opportunity to show a far greater net profit on the volume of business they will do, as they are today much better business men than they were previously.

As to any suggestions I might have, naturally the used car situation is of vital importance. If dealers would discontinue their present practice of making excessive allowances on cars taken in trade, there would be every opportunity for their making more money in the future than they have in the past.

OPERATIONS CHANGED TO MEET CONDITIONS

By E. J. BUSH,
Vice-President and Sales Manager Diamond T Motor Car Company

The Diamond T dealer organization has shown not only remarkable courage during the present situation, but has been quick to change their method of operating to meet the condition that exists today.

Perhaps we are more fortunate than some other manufacturers, because all of our dealers finance their own operations, and, since the Diamond T franchise is limited to those dealers strong enough to finance themselves, we do not suffer as much in a period of depression as does the manufacturer whose dealers are largely supported by factory finance plans.

We have lost practically no dealers through failures, and I would say that the Diamond T dealers, through this period, have more than held their own as regards volume and profits. They have been quick to respond to our model 216, which has helped them very materially during this period. This necessitated their going into the light truck field, where, heretofore, they had nothing to sell, but they have produced a satisfactory volume of business, which has been profitable both to the dealer organization and the factory.

I have no criticism whatsoever for the dealers generally, but I do feel that in many instances where the dealers have suffered misfortune it has been due to factory policies which involved the dealer and for which, primarily, the dealer is not to blame.

REDUCED OVERHEAD HAS HELPED

By F. F. SOPER,
Sales Manager Federal Motor Truck Company

Unquestionably the business of motor truck merchandising has been established on a more substantial footing during the past year. The necessity for better selling methods has materially developed distributor organizations. It brought out of them the very best

(Continued on Page 32)

The man who sells motor cars today without first investigating the Free-Wheeling Hupmobiles and Hupmobile's liberal franchise, either doesn't know value . . . or doesn't care.

HUPMOBILE

FREE-WHEELING AT NO EXTRA COST . . . CENTURY SIX SEDAN, $995 . . . CENTURY EIGHT SEDAN, $1295 . . . THREE OTHER EIGHTS FROM $1595 TO $2295 . . . . PRICES AT FACTORY

HUPP MOTOR CAR CORPORATION

DETROIT . . . MICHIGAN

"WE BELIEVE THE HUPMOBILE TO BE THE BEST CAR OF ITS CLASS IN THE WORLD"

How You Can
Sell More Cars
In Philadelphia

It is significant that for six consecutive months of 1931 the ONLY newspaper in Philadelphia to show a gain in advertising lineage is the

PHILADELPHIA DAILY NEWS
THE PEOPLES PICTORIAL

This record is all the more remarkable because it represents a gain over a previous record six months.

More national and local advertisers are spending more money in the News than ever before because they are getting profitable returns from every dollar spent.

So valuable are News readers to advertisers, so high their individual and aggregate purchasing power, that the News carries the advertising of Six out of Seven leading department stores; it runs second in advertising of women's clothing, furniture and jewelry.

Here is a buying market NOW for automotive manufacturers. Here are people with money, spending money. Represented in the advertising columns of the News, a manufacturer of vehicles can tell his story to families, 95 per cent. of which are in greater Philadelphia.

Unusual concentration, another reason for high sales returns to advertisers.

High reader interest of the whole family means you can sell cars to the whole family. The proved responsiveness of its readers to advertising copy is merely a function of the high reader interest.

Tell It in the
NEWS in Philadelphia and Make Sales

CHICAGO OFFICE:
Charles H. Shattuck
333 North Michigan Ave.

PHILADELPHIA OFFICE:
22nd and Arch Streets

NEW YORK OFFICE:
350 Hudson Street

Body Design Trends

By J. LEDWINKA

Chief Engineer the Edward B. Budd Manufacturing Company

The automobile industry has thrived on changes and improvements as has no other American industry. With each major improvement in the motor car we have seen a sharp increase in motor car sales. The self-starter, the balloon tire, four-wheel brakes, free wheeling, all have had a favorable effect on the industry. We have seen the motor car in the past decade make rapid strides. We have witnessed many mechanical changes and have seen automobiles become faster, quieter, smoother, more economical to operate and generally more efficient machines in every way. What, then, is the next radical change or improvement in the automobile?

This question has been asked frequently by the motor car buying public, as well as by the dealer and the automobile salesman. The engineer, however, has not been puzzled by this query. He knows that the most important subject before the industry today is the streamlined automobile.

Here, then, is the next major improvement in the automobile. This change is due to come about within the next five years, maybe sooner. It is logical, necessary and has already been too long deferred. We know that today's body design is far from ideal. We know that the present-day automobile offers a tremendous and needless resistance to wind; that it is cumbersome, clumsy, not particularly beautiful in design and lacking in grace and harmony of lines and contour. We are also well aware of the fact that it is heavier than it should be, that its seating arrangements leave much to be desired and that its weight is not scientifically sprung.

These facts are sufficient proof that a change in body design is necessary. The trend of motor car bodies in the past few years has been toward the streamlined type. Today's car is lower, somewhat lighter and more nearly streamlined than the car of four or five years ago. However, before we have a fully streamlined car we will see the automobile body undergo gradual changes leading to streamlining.

Our motor car buyers are a peculiar lot. They want the most advanced type of construction, the best motors, the finest cars for the money. Yet, they will not accept a radical change in body design overnight. They must get it in easy stages. For this reason, if for no other, the streamlined car will have to be brought out gradually. Perhaps some of the more daring manufacturers may take the bull by the horns and introduce a fully streamlined car within the next few years, or even within the next year or so. The majority of manufacturers, however, do not feel that the public is ready yet for the fully streamlined car. They would rather change their body designs gradually and let the streamlined car be evolutionary rather than revolutionary.

The engineering world has long been fully aware of the advantages to be obtained from complete streamlining. Not only that, but engineers have conducted tests, built experimental streamlined cars and worked this problem out quite thoroughly. They know, for example, that a streamlined car will give considerably more mileage than a non-streamlined car. They know that wind resistance at touring speeds is tremendous and that streamlining will overcome it to a large extent. For this reason body designers have veered more and more toward the fully streamlined car. Just how important this subject is within the industry may be gleaned from the fact that technical sessions devoted to this general topic were the most widely attended of all the talks at the summer meeting of the S. A. E. last June.

From a body manufacturing point of view, the fully streamlined car presents no unusually difficult production problems. All-steel streamlined bodies may be stamped out just as economically and as efficiently as the conventional all-steel body of today. Recent improvements in stamping and in welding all-steel bodies have so advaned the art of motor car body building that we are now considerably ahead of where we were five years ago. Our own experiments and our own thoughts on streamlining have brought to light no practical manufacturing objections to this type of body and we are prepared when the industry is ready for the fully streamlined car to do our part.

The advent of the streamlined car is not without a certain economic or merchandising significance. Doubtless, the general and widespread appearance on our streets of an automobile with an entirely different type of body will permit the re-entrance of the style appeal into the business of merchandising automobiles. Some manufacturers may contend that this appeal has never departed, but it is difficult to believe this. Today virtually every car is stylish. Even a car three or four years old is to all appearances a stylish car. When the streamlined car makes its appearance, it will make all other cars obsolete in appearance, and it may do much to stimulate the sale of automobiles.

These trends in body design may seem to the layman to be rather far-fetched and might even sound somewhat fantastic. But they are, nevertheless, significant, and, although it is a question as to just which year will see the introduction of streamlined cars, no one in authority in the industry will deny that they are coming and before many years, too.

BATTERY SERVICE

(Continued from Page 9)

generator input of current to the battery just balance the current drain on the battery due to starting, lights, ignition, etc. If the record of battery readings at bimonthly intervals over a period of say two months indicates a fully charged condition at the time of each reading it is an almost positive indication that the battery is being overcharged. A further indication of overcharging is the necessity for adding an excessive amount of water to the cells to keep the electrolyte at the proper level. With proper adjustment of the charging rate to the driving conditions only a small amount of water once a month should be required.

The charging rate should be reduced until the record of readings over a two months' period shows the condition of charge of the battery to vary from full charge to partial charge and back to very nearly full charge again. In other words, a fluctuating reading at the different test intervals is the condition to be worked for.

Careful adjustment of charging rates to meet driving conditions will go a long way toward increasing battery life.

NEW ONE-STOP STATION

Oswego, N. Y., Aug. 26.—To be a complete one-stop service station the Lewis Tire Shop at the corner of West 3d and Bridge Streets has been completely remodeled during the past few weeks and has been reopened with a complete stock of Firestone tires and Texaco gasoline products. Albert W. Lewis, proprietor, has installed a complete equipment including a 5,000-pound Grace pressure outfit, hydraulic hoists, etc. The station is one of the best equipped in the city and presents a fine appearance.

HAMMEL-CHEVROLET CO. FORMED IN CHICAGO

Chicago, Aug. 26.—George E. and Daniel J. Hammel have taken over the Elmwood Park Motor Sales, 7233 West Grand Ave., and are operating the company at that address as the Hammel Chevrolet Company, Chevrolet dealer in the community.

FORM GARAGE CONCERN

Asbury Park, N. J., Aug. 26.—The Charles E. Goodwin, Inc., to operate garage, has been formed by Charles E. Goodwin, Point Pleasant; Earle S. Levis, Ocean Grove; Clarence F. Woolley, West Belmar, and John A. Reid, Asbury Park.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

DIAMOND·T

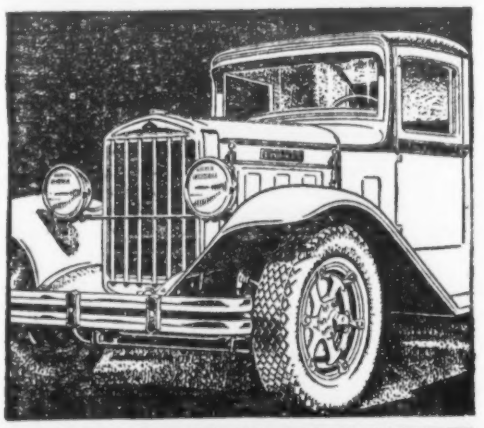
announces

a *NEW*

2-TON TRUCK

$1095

Chassis at the factory



11% more *truck!*
25% less *money!*

	Chassis Weight	Piston Displacement cu. in.	Gross Capacity* Pounds	Price
Diamond-T Model 316	4400	263	11500	$1095
Truck "A"	4050	248	9000	1525
"B"	3780	208	10175	1425
"C"	4580	248	10500	1855
"D"	3385	257	9000	1245
"E"	4032	224	8967	1450
"F"	4025	268	13600	1645
"G"	3725	224	9000	1595
"H"	4080	248	9000	1485
"I"	3810	205	9600	895
"J"	3958	224	9658	1495
Average of 10 competitors	3942.5	235.4	9850	1461.50
Diamond-T Model 316	4400	263	11500	$1095
Diamond-T Superiority	11.6% more	11.7% more	16.5% more	25% less

Maximum total weight of chassis, cab, body and load. (Above figures taken from Automotive Daily News, Commercial Car Journal and other sources believed reliable.)

TO put it bluntly, the plain truth about this new Diamond T, if simply stated without proof, is too sensational to be believed.

Diamond T, whose word has stood unbroken through 25 years of progress in the truck industry, here introduces *"11% more truck, for 25% less money"* than you can obtain elsewhere, and PROVES IT, right here!

The table at the right shows how this great truck compares with its ten leading competitors in size, power, and capacity. Specifications prove that Diamond T quality goes all the way through.

Model 316, with its previously announced companion 1½-ton model 216, is Diamond T's answer to today's business conditions. These trucks are selling *in volume* in the toughest truck market ever known.

Companion to the recently introduced

1½-TON, MODEL 216

which leaped to immediate volume sales!

This is the truck which has brought true, heavy-duty, truck-builder's engineering into the light truck market.

Model 216 competes, on a pure price basis, against everything in the light commercial car field.

It competes, on a strict performance, appearance and endurance basis with any vehicle rated at 1½ tons capacity, regardless of price.

Diamond T dealers are making money, and will make more money, because Diamond T has found the real "self-starter" to better business. You can't afford not to write for the full story . . . you ought to wire for it.

$695

Chassis at the factory

- √ 6-cylinder *Truck* Engine
- √ 7-Bearing Crankshaft
- √ 228 cubic inch piston displacement
- √ 50 miles per hour under full load on normal roads
- √ Full floating rear axle, with one-piece cast steel housing
- √ Hydraulic 4-wheel brakes, with cast rear drums, 15" x 2¼"
- √ 4-speed *truck* transmission
- √ 135½" wheel base—158" optional at extra cost
- √ Chromium-plated radiator and brightwork

DIAMOND·T MOTOR CAR COMPANY

C. A. Tilt, President

Factory and General Offices, *West 26th Street, Chicago, Illinois*

Reduced Overhead, Better Planning Aids Dealer

(Continued from Page 29)

effort of which they are capable. Like a finely trained prizefighter, these organizations are now able to go out and give an excellent account of themselves.

In most instances dealers have substantially reduced overhead. They have stopped leaks and cut the corners on operating expense in all directions. They have watched trade-in allowances carefully and kept used truck inventories low. They are making cleaner deals and showing a better net profit on their volume of sales than they have for many years. They are, in fact, in excellent position to go ahead rapidly with the general upturn in business which now seems under way.

Many of our own distributors have not only held their own the past year, but have actually increased volume as well as net profits. These are the organizations, of course, which have increased rather than diminished their merchandising effort, at the same time reducing lost motion and generally taking up slack in their merchandising machinery.

We believe truck distributors and dealers are to be congratulated on their observance of business ethics and their general conduct. They have, for the most part, adhered to sound merchandising practice and in most cases sold equipment which, in their opinion, was best adapted to the job.

TRUCK MERCHANDISING ON HIGHER PLANE

By R. E. SCHRIDER,
Sales Manager Graham Motors, Inc.

There is no question that the present depression has forced the various dealers handling commercial units to place their business on a higher plane to cut their large overheads and make every dollar count. On the other hand, there are still some dealers who do not fully analyze their sales possibilities or know their product sufficiently to be able to secure orders against competition. Dealers who do not investigate their customers' credit ratings first or the customers' knowledge of the truck business are spending much time and money on sales that cannot be financed after the order is secured.

Many of the dealers throughout the country have increased their business over last year by making an intensive study of conditions now existing and have increased their profits by so doing.

For example, a dealer called upon a milling company and found that, according to their present mode of operation, which was selling their flour to wholesale houses, then the wholesale houses selling to the retail grocery stores, that they were operating in red ink every month, as their volume was not sufficient to justify their expenditures. After the dealer had secured this information, he made the suggestion to the milling company that they purchase a number of trucks and deliver their product direct to the retailer, and in this manner they could naturally increase their volume, as every driver would be a salesman, and in the event the retailer was not in position to purchase a large quantity he could afford to purchase several sacks at a time and, incidentally, he would pay cash for them. This method of operation not only placed their business on a cash basis, but showed the miller, after a three-month trial, that he had increased his volume 25 per cent. and was now operating in black ink, instead of red ink. This is only one of the many instances where dealers have increased their sales by an intense study of their customers' problems.

This year has undoubtedly shown the dealer that it is necessary to promote sales rather than wait for sales to come to him, the same as it has shown the truck operator that the operation of trucks is just as much a business as any other business. This being the case, we might then say that the present depression has placed the motor truck business on a much higher plane than heretofore, and will make it possible for everybody connected with the truck industry to increase their profits, as guesswork is being eliminated and trucks are now being sold and operated on a cost per mile or cost per ton basis.

DEALER MORTALITY LESS PROFITS GREATER

By J. M. CLEARY,
Sales Manager Studebaker Corporation

Operating statements sent by dealers to the retail management department of the Studebaker Corporation of America indicate that dealers have made great progress during 1931 in improving their accounting, in budgeting their businesses and in reducing expenses.

Of course all these statements are kept strictly confidential, but the following net results secured by various Studebaker dealers in all parts of the country may prove interesting:

Location of Dealer	Cars sold	Net profit
Far South	31	$2,660.09
New England	75	8,748.25
Illinois	46	4,715.41
Kansas	21	2,353.77
Texas	24	2,276.97
Pacific Coast	34	3,171.55
Pacific Coast	162	12,071.98
Pacific Coast	204	24,656.59
New Jersey	56	4,544.26
New York	58	7,595.02
Far West	82	18,160.37
Far West	28	3,456.29
Pennsylvania	22	1,981.01
Northwest	42	4,615.82
Northwest	108	13,636.04
Indiana	34	3,722.76

As far as the dealer organization is concerned, the dealer mortality has been far less and the profits far better than any one would have predicted for such a period of extraordinary stress and low total volume of business.

MONROE, N. C., SERVICE OWNERS TO ORGANIZE

Monroe, N. C., Aug. 26.—Plans are being rapidly formed here among service station men to form an organization to relieve the present cotton situation to a certain extent. According to J. G. Waters, who is originator of the plan, service stations will be asked to use raw cotton of the 1931 cotton crop for cleaning purposes, instead of the rags which are being used at present. The cotton will be bought from the farmer directly, and it is hoped that the organization will soon be state-wide.

RODGERS RECOVERING

Bloomfield, N. J., Aug. 26.—Charles A. Rodgers, Inc., Nash dealership, A. Rodgers, president of the Charles is still at his home on Osborne Street, Glen Ridge, recovering from serious illness which has confined him to his home for more than two weeks. During Mr. Rodgers' illness, his sales force has taken charge of removing his stock and equipment to the company's new location at 427 Bloomfield Ave.

Bendix Gives Details Of New Clutch Control

CHICAGO, Aug. 26.—Details were announced today by the Bendix Aviation Corporation of the development and marketing of a device that eliminates all necessity of manual clutch operation by the driver of an automobile, truck or bus, and which will sell at $19.50 and upward.

Development of the idea is claimed by automotive engineers to be fully as important to the industry as the self-starter and four-wheel brakes, due to making it possible to start, stop and shift gears without the driver touching the clutch pedal. Control of the clutch mechanism is vested entirely in the accelerator. In the words of Bendix engineers, "the left foot has lost its driving job."

Known as Bendix clutch control, the device operates wholly by action of the accelerator and obtains its power from a vacuum created by the intake manifold.

The equipment can be placed on practically all past or present automobiles, trucks or busses that are accelerated by a foot throttle. Installation is simple, the only tools required being a drill and wrench.

Bendix clutch control units are now being manufactured on a quantity basis in the Bendix plant, at South Bend, and wide demand for the device is expected to result immediately with the launching of a gigantic national advertising campaign.

That the clutch control system eventually will be built into all motor vehicles, the same as the starter and four-wheel brakes, is the confident prediction of automotive engineers who have examined the device.

However, because of the vast field that exists in installing the clutch control on motor vehicles now in operation, the Bendix Corporation plans to devote its principal attention at present to marketing it to individual owners.

The clutch control idea has been the subject of exhaustive tests over a period of nearly three years. The vacuum principle of pedal operation is referred to as an accepted and proved fact in the automotive industry. For several years the B-K vacuum brake booster has been

(Continued on Page 38)

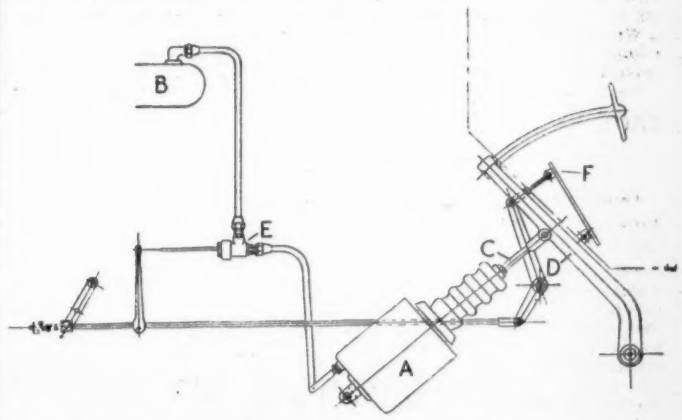


FIG. 1—This diagram shows the general principle of Bendix Clutch Control. A vacuum cylinder (A) is connected by a metal tube through a valve (E) to the intake manifold (B). A piston (C) in the vacuum cylinder is connected by cable to the clutch pedal (D), while the valve (E) is connected directly to the accelerator (F).

CHROMASHYNE

PROTECTS CHROMIUM
PREVENTS RUST

REMOVES TARNISH
RESTORES LUSTER

Cleans and Waterproofs

Windows—Windshield
Mirrors—Reflectors
Contains No Grit—No Acid

Just rub it on, rub it off. The resulting polish and luster will amaze you. An absolute necessity for every auto owner, garage and home.

SAMPLE ON REQUEST

Attractive proposition to Jobbers and Distributors.

Write to Sales Dept.
Chromashyne Products, Inc.
508 West 44th St. New York City

New Car Registrations in Key Counties for First Half of 1931

County	Auburn	Austin	Buick	Cadillac	Chevrolet	Chrysler	Cord	De Soto	De Vaux	Dodge	Durant	Essex	Ford	Franklin	Graham	Hudson	Hupmobile	La Salle	Lincoln
Los Angeles	996	362	1853	384	9815	748	31	620	171	700	218	507	12978	97	319	325	296	159	112
San Francisco	263	4	623	92	1458	270	11	322	59	193	33	99	3040	21	109	116	139	39	31
Denver	85	8	302	31	1498	92	8	19	4	121	33	104	1315	5	58	64	45	9	7
Chicago	1715	41	2163	483	8060	1220	139	421	46	1647	66	856	10538	110	367	395	608	334	214
Indianapolis	222	7	228	29	1717	174	7	455		178		160	1804	14	47	60	79	11	8
New Orleans	36		54	7	796	62	5	45	5	69	3	81	827	12	40	42	48	3	6
Baltimore	146	3	427	49	3509	184	5	85		176	34	245	2499	38	89	90	174	34	15
Boston	188	1	545	61	2036	244	6	30	10	323	10	553	3410	37	48	144	96	52	20
Detroit	449	21	1127	284	7146	843	24	325	80	899	36	1313	12496	3	353	490	240	113	88
Minneapolis	176	11	343	34	2740	293	8	84	6	120	41	205	1895	5	116	102	153	33	10
St. Louis	288	13	629	71	4668	219	21	162	15	281	86	335	3743	15	182	99	164	53	30
Cleveland	430	10	565	103	4052	308	15	286	15	463	40	533	4632	22	164	194	290	58	28
Cincinnati	208	8	306	30	2164	306	7	118	3	139	29	146	2174	30	52	42	87	27	16
Philadelphia	442	15	1215	151	4329	575	13	234	38	504	11	768	4442	49	202	243	212	153	48
Seattle	63	10	289	26	945	175	7	94	9	71	60	86	1438	11	50	27	163	5	10
Milwaukee	305	18	352	48	1746	242	14	91	32	416	39	367	1893	8	112	143	76	36	6

County	Marmon	Nash	Oakland	Oldsmobile	Packard	Peerless	Pierce-Arrow	Plymouth	Pontiac	Reo	Studebaker	Stutz	Viking	Whippet	Willys	Willys-Knight	Miscellaneous	Total 1931 Jan.-June,
Los Angeles	38	572	279	528	323	13	132	123	851	108	1192	7	22	71	447	210	92	35,699
San Francisco	22	269	74	118	82	8	62	293	172	41	288	6	3	5	81	45	17	8,508
Denver	31	107	43	83	25	1	12	60	186	30	108	4	1	17	118	18	4	4,656
Chicago	175	1106	378	1849	667	134	186	347	1939	176	1286	40	15	11	465	185	143	38,525
Indianapolis	143	114	51	318	23	1	11	137	320	28	152	16	1	81	102	2	53	6,775
New Orleans	23	138	6	45	14	2	8	23	84	2	58	2		1	30	11	5	2,598
Baltimore	17	213	108	122	95	45	33	151	505	37	224	3	2	3	100	32	6	9,498
Boston	24	338	47	223	82	15	48	85	374	44	232	1	2	1	76	37	3	9,446
Detroit	130	172	158	1004	219	12	19	345	1029	93	278		1	276	324	79	3	30,472
Minneapolis	17	180	60	465	78	4	23	242	337	40	210		3	14	191	34	181	8,454
St. Louis	171	263	123	499	97	5	88	204	575	64	309	2	10	199	399	34	111	14,227
Cleveland	184	338	129	516	109	139	56	221	837	48	337	12	7	5	241	88	9	15,484
Cincinnati	47	176	31	277	62	1	32	191	288	24	198	5	1	244	200	99	100	7,868
Philadelphia	95	352	79	542	201	21	60	113	467	22	305	1	8	10	207	69	54	16,250
Seattle	13	66	37	100	43	1	15	106	160	35	235	3		20	79	25	2	4,479
Milwaukee	41	334	135	354	60		36	54	445	32	183		6	4	127	41	18	7,814

Truck Dealers Have Not All Been Awake to Possibilities Of Service

(Continued From Page 22)

for the first five months in 1931 over 1930. The general decrease in the sale of parts for this period is about 50 per cent., as compared with the same period in 1930.

Conditions here at our plant in regard to work in the repair department have been very good, indicating that truck users are still going to make the old jobs last just as long as they possibly can before making an outlay of cash for new equipment. One need only make a survey of the number of trucks that have had temporary repairs made on them during 1931 to realize the enormous number of trucks that will be replaced with new equipment just as quickly as business in general takes on an upward turn.

Earlier in the year of 1931 we canvassed and made follow-up by letters to all of our entire distributing and dealer organization, endeavoring to impress upon them the opportunity that lies before them in obtaining their share of the replacement parts business, but it appears that the prolonged depression has taken the life out of most of them and they are satisfied to take such business that comes to them, and have no desire of going out and trying to improve their conditions.

We are all willing, I believe, to admit that things have been in a deplorable state, and are yet in such state, yet there is quite a lot of business to be done and the fellow that is keeping continually after it is the one that is making the best of the present business conditions.

NEW SERVICE GARAGE

Rochester, N. Y., Aug. 26.—George S. Roat, formerly identified with the New York Auto and Supply Company, has been named president and general manager of the Roat Motor Service Station, Inc., which has completed remodeling of the first floor of the building at 330 East Ave. into an up-to-date automotive service and repair garage.

Dealers Should Sell Good Will

By C. E. SALISBURY
Director of Service
Hupp Motor Car Corporation

My opinion is that during the last year automobile dealers have recognized more fully than ever the importance of service work as a means of adding to their income. The reduced volume of car sales has brought this to their attention very forcibly.

On account of their reduced earnings, they are not able to invest in much equipment but I feel they will recognize its value and will do so as soon as their earnings warrant it.

Dealers have but three things to sell—material, labor and good will. A dealer should make it his business to sell good will to his customers, then he will have no trouble in disposing of the material and labor.

Depression Has Forced Dealers To Turn to Service

By C. H. REDMAN
Service Manager
Four Wheel Drive Auto Company

In my estimation, the year of 1931 has done more, through the general depression, to forcefully impress upon every automotive dealer, the growing necessity for quicker and more efficient service.

The depression has doubly impressed the dealer that service if given cheerfully and unhesitatingly does more to build sales than could be done by any other method.

The reduction in volume of automotive sales has served a useful purpose in making the average dealer "service-minded." It has turned the minds of dealers toward the building up of service departments and making investments in new equipment.

The cloak of economic depression will be lifted only after we have become 'service-minded" and are able to use it to build up good will and faith.

Chassis Lubrication

By T. R. THOMAS
Chief Engineer, Bijur Lubricating Corporation

Early designs of automobiles embodied ideas of lubrication of both the motor and chassis bearings, which were comparatively crude. The motor, being by far the most important as regards reliability, was given first attention, and years of development resulted in a lubricating system requiring practically no attention on the part of the car owner.

During the past few years the need for efficient chassis lubrication has been recognized by engineers and considerable work has been done along the lines of improving the means of lubrication of the chassis bearings.

The most important requirement is that all bearing surfaces should be separated by a protecting film of lubricant. This entails the application of oil at very frequent intervals, which can most conveniently and efficiently be accomplished by the use of a system distributing from a central source.

The outstanding advantage of a central system of chassis lubrication is that parts requiring frequent lubrication are taken care of, and the necessity of frequently recurring visits to the service station is thereby eliminated. The resultant advantages are, briefly:

1, Easy steering; 2, elimination of squeaks; 3, smooth, comfortable riding; 4, reduction of car depreciation; 5, oil fed from the inside of bearings instead of the outside, flushing them and preventing entrance of dirt into lubricant; 6, no hardening of lubricant and consequent clogged passages, which occasionally occurs with grease, and then requires special high-pressure servicing to clear the bearings.

The efficiency of a central system depends upon proper application and installation, so, for this reason, it must be built in at the factory while the car is being assembled.

The central system, which has been developed by the Bijur Lubricating Corporation, supplies heavy, filtered oil to the chassis bearings. The system operates continuously while the car is in motion and feeds to each bearing the proper amount of oil required under all driving and weather conditions.

A lubricator unit is mounted conveniently under the hood, either on the engine side of the dash, or, in some cases, on the engine itself. It comprises a glass or metal reservoir containing oil and an automatic pump, the latter, small in size but of rugged design, being directly connected to a flexible diaphragm actuated by changes in suction in the engine intake manifold. The pump is a self-contained non-adjustable unit which not only operates automatically but also automatically controls its output to deliver exactly the proper amount of filtered oil to the chassis bearings under all

(Continued on Page 35)

BROWNING, JR., JOINS AUTOMOBILE BANKING

Philadelphia, Pa., Aug. 26.—W. H. Browning, Jr., who for many years was connected with Commercial Credit Companies and until recently was in charge of sales work for that organization in eastern Pennsylvan, southern New Jersey and Delaware, has joined the Automobile Banking Corporation, Philadelphia, Pa., in the capacity of manager of the new business department.

Automobile Banking Corporation is one of the oldest automobile banking institutions in Philadelphia, with representatives in principal cities in Pennsylvania, New Jersey, Maryland and Delaware.

PLAN $50,000 COACH TERMINAL IN ASHEVILLE

Asheville, N. C., Aug. 26.—Members of the Southeastern Motor Coach Operators' Association, meeting in convention here, decided to establish a tariff bureau in Atlanta, Ga.

The association decided to postpone selection of a site for the new bus terminal here for several weeks. Several sites are under consideration, it was understood. The terminal is expected to cost between $50,000 and $80,000.

F. H. AHRENS APPOINTED

New Orleans, La., Aug. 26.—Announcement of the appointment of F. Herman Ahrens as sales manager for Gulf Oldsmobile Company, Olds distributor here, was made by C. R. Loree, general manager of the company.

Classified Advertising

Classified Rates 5c Per Word

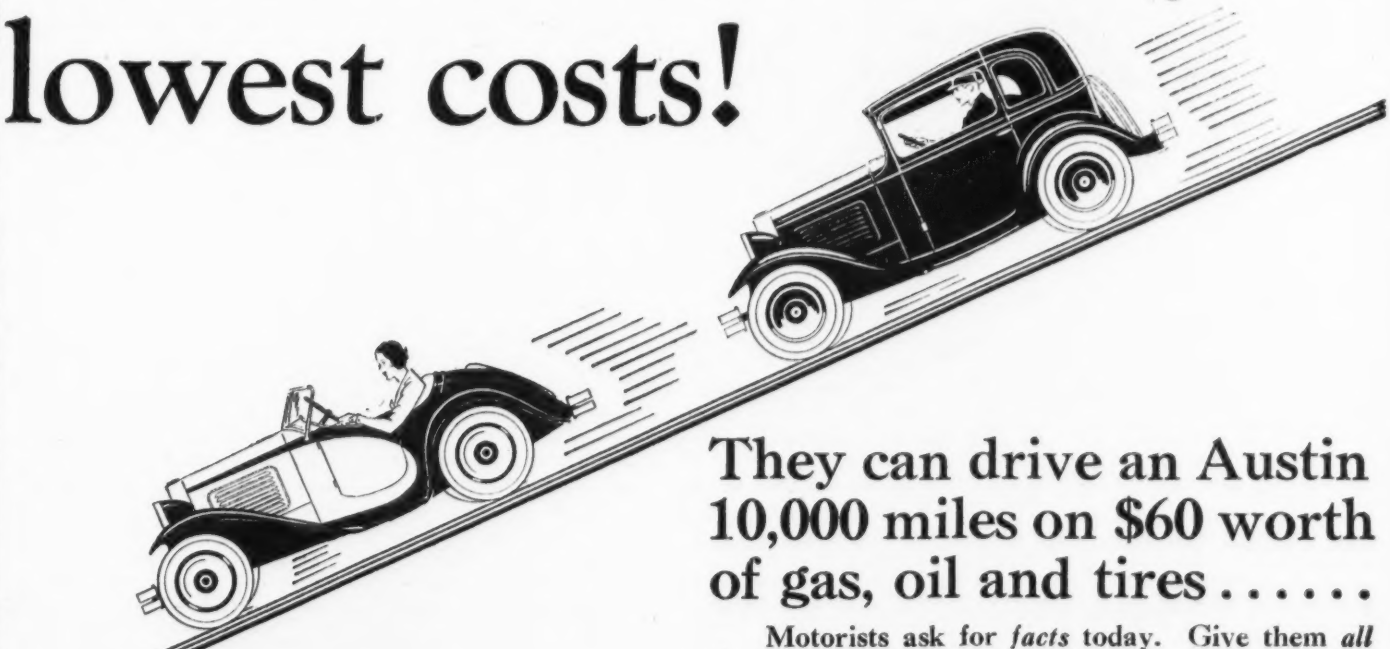
ACCOUNTANT-COMPTROLLER

Desires connection where ability and experience can be applied to business management. 15 years diversified experience public accounting and banking. Last four years assistant regional accounting manager for one of the largest automobile companies. Have complete knowledge of capital requirements, operating standards and budgets. Box 287, Automotive Daily News, 350 Hudson Street, New York.

MANUFACTURERS—Two new much needed patents. Are selling good to State Highways, counties and repair and service men. Must sell quick—a real money maker for manufacturer or sales agency. Will sell outright or royalty. Tried and tested—you will take no chances. Wire or write at once. Nelson Mfg. Co., Monticello, Ind.

WANTED—Distributors, agents, jobbers and dealers. Write now for franchise particulars to sell Villard Truck Signals and Motor Vehicle Reflectors. Villard Signal Mfg. Co., Rochester, N. Y.

Show them the way to lowest costs!



They can drive an Austin 10,000 miles on $60 worth of gas, oil and tires.....

Motorists ask for *facts* today. Give them *all* the facts about the bantam Austin. Give them the figures of bantam economy—6-10 cent a mile for gas, oil and tires. Take a pencil and show them how they can get an Austin business coupe, plus coast-to-coast running costs, for less than the price of any other car.

There's a thrill to thrift for Austin drivers. For there's smooth riding, easy handling and smart lines in every one of the seven bantam models.

Write us for details of the Austin franchise in your locality. Dealers and distributors are tying in with Austin's aggressive sales and publicity campaign. Now, more than ever, is the time to sell a car that puts a thrill in thrift.

PRICES

Business Coupe	$330
Standard Coupe	395
Runabout	395
De Luxe Coupe	525
Cabriolet	550
Panel Delivery	450
Quarter-Ton Pick-up Delivery	325

All Prices F. O. B. Butler, Pa.

Bantam Engines available for industrial use. Write Dept. K.

THE AMERICAN Austin

THE AMERICAN AUSTIN CAR COMPANY, INC., BUTLER, PA.

IGNITION SERVICE

(Continued From Page 3)

breaker points have been set for maximum gap the twin ignition and double breaker point three and four lobe cam distributors must have the points carefully synchronized.

On the twin ignition distributors the two sets of points must open at the same instant if the highest efficiency is to be obtained from this type of ignition. On practically all distributors of this type provisions are made by the manufacturer so that one set of points can be rotated around the cam and the exact setting obtained without any great difficulty.

On the three and four lobe cam double breaker arm distributors the two sets of breaker point must be synchronized so as to break exactly sixty or forty-five degrees apart. There are numerous synchronizing tools on the market which are very accurate, and when properly used by careful electricians will result in less than one degree variation at the distributor. When it is realized that even one degree variation at the distributor means four degrees variation between the firing of cylinders, the importance of exact work cannot be overemphasized.

While it has been the practice in the past to use a small six-volt light connected across the breaker points to determine when they open experience is showing that more accurate results can be obtained by having the coil high-tension wire jump a small gap to ground to determine when points open. The more advanced synchronizers employ this method of determining the breaking of the points.

The next step in tuning up the distributor is proper timing of the engine. Here again absolutely exact work following the manufacturers' specifications is necessary if the engine is to perform to the best of its ability. The more advanced service stations are no longer using fly wheel markings for timing, but rather exact piston position. Many engine manufacturers are today building their engines so that a rod can be dropped directly on top of the piston and exact position easily determined with proper equipment. Where this is not possible, piston position should determine through the spark plug hole. After the exact piston position has been determined slack in drive gears and timing chain should be taken up in the direction of drive and then the points set to break so that the high tension spark will occur at the exact setting of the manufacturers.

As a final step in checking the ignition spark plugs should be removed from the engine, all carbon cleaned off and the plug gap set for proper spacing. While a few thousandths variation in the gap from standard setting does not make any material difference, it is important that al plugs in one engine have the same gap.

To review briefly, distributors must be clean and mechanically perfect, breaker points set to manufacturers' specifications, double breaker point distributors carefully synchronized, all wiring connections in the ignition system mechanically tight and electrically perfect, this includes both the primary and secondary connections, distributors properly timed to the engine and spark plugs clean and set for proper point gap.

Many do not realize that ignition coils and distributors are designed to operate one with the other and that an engine otherwise in perfect condition will fail to run efficiently because other than the original make and type of coil has been used in servicing.

DE VAUX INSTRUCTS DEALERS ON ORDERING

Grand Rapids, Mich., Aug. 26.—H. J. Hudson, service manager of De Vaux-Hall Motors Corporation, today instructed dealers and repair men that when ordering rear axles or parts for rear axles, they should be sure to specify split center or split side housing.

Due to the fact that both types have been used in production and in replacement, this information is necessary to correctly fill orders.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

CUMULATIVE NEW PASSENGER CAR

Returns for today: Arizona, California,

Figures in this table are from R. L. Polk & Co. of Detroit, with the exception of Illinois, which are supplied by the Robinson Advertising Some of this data has been published previously, but it is given here complete for the convenience of our subscribers. Readers desiring In this table 41 states and the District of Columbia.

States	Auburn	Austin	Buick	Cadillac	Chevrolet	Chrysler	Cord	De Soto	De Vaux	Dodge	Durant	Essex	Ford	Franklin	Graham	Hudson	Hupmobile	La Salle
Alabama	11		39	2	548	20	1	8		23		6	482		5	2	1	
Arizona	6		19	2	166	10		9	10	16	2	5	198			2	1	
Arkansas	2		28	3	317	40		14		82		5	578		16	2	4	4
California	388	33	710	100	3336	351	6	350	209	377	84	117	3725	16	136	104	102	40
Conn.	66	1	221	36	810	106	1	104	25	122	16	89	748	13	37	41	36	19
Delaware	1		29	5	151	23		6		3	10	8	118			5		4
Florida	32	6	51	1	672	70	3	13	4	32	4	31	651	4	35	23	12	4
Georgia	6		49	3	530	17		9	4	36		10	458	1	12	10	11	5
Idaho	3	2	18		150	16		8	9	21	2	3	155	1	6	2	2	
Illinois	315	15	570	94	3929	439	10	301	69	417	29	213	3718	13	160	93	157	81
Indiana	121	3	149	10	1300	146	4	165	7	186	13	111	1016	2	45	55	35	10
Iowa	31		114	7	1637	89	1	28	38	120	25	86	1144	3	30	57	35	3
Kansas	14	11	102	10	1469	57	3	38	4	98	18	75	872	2	34	45	11	5
Louisiana	8	1	42		754	38	2	34	6	64	1	14	568		8	7	7	5
Maine	19		60	9	351	35		12	4	34	6	60	339	2	22	33	9	6
Maryland	57		82	7	978	66	4	21	2	53	14	65	687	3	38	25	15	7
Mass.	156	8	434	57	2132	243	2	62	28	218	39	320	2585	26	84	133	96	67
Michigan	86	12	316	51	2259	203	3	153	59	226	39	251	2100	4	69	110	58	31
Minn.	49	3	158	11	1625	129	1	59	12	102	21	78	1066	3	47	49	54	5
Missouri	55	6	137	11	1458	90	4	48	1	129	13	61	1131	3	55	31	33	10
Montana	9	1	41	3	329	27		20	14	27	9	23	246	1	5	15	9	3
Nebraska	18	7	60	3	984	45	2	13	9	47	4	27	713	1	21	11	7	2
Nevada	9		14		95	22	1	7	2	8		4	90		5	2	1	1
N. Hamp.	9	2	47	4	264	15		15	1	26	3	38	266	2	14	9	7	1
N. Jersey	175	5	442	65	1940	317	6	90	45	147	64	143	1597	12	58	85	91	35
N. Mexico		1	31	3	168	16		2		15	4	2	139	1	2	3		1
N. Car.	32	8	78	8	1390	101		40	10	114		64	1313	2	22	31	11	9
N. Dakota	3		11		218	11		2	6	10	3	7	165		5	3	3	
Ohio	211	3	269	39	2631	327	7	270	37	286	48	266	2490	18	102	97	130	22
Oklahoma	19	6	93	14	966	66	2	13	2	113		12	632	5	10	7	4	4
Oregon	21		61	3	415	50	2	34	18	42	17	15	345	3	36	20	1	3
Penna.	314	17	716	81	3902	618	9	321	71	475	71	354	2834	30	252	142	155	65
Rho. Isl.	40	3	96	7	451	76	1	62		44	7	49	382	5	20	12	19	5
S. Ca'lina	12	1	30	1	666	32		16	9	35		26	609		8	14	10	2
S. Dak.	4	2	18	2	296	17		21	13	31	4	18	212		4	6	6	
Utah	12		24	5	184	9		7	6	16	3	9	164	1	11	17	5	
Vermont	7		26	1	128	18		12		18	4	26	141		6	10	7	2
Virginia	17	10	95	10	1458	99		53	1	66	6	75	1256		23	33	31	5
Wash'ton	38	8	133	8	768	96	1	86	28	78	23	53	771	4	52	34	35	8
W. Va.	47	4	56	4	649	66	2	32	12	96	3	41	582	2	32	18	18	3
Wisconsin	85	4	131	20	1683	139	3	78	33	164	17	122	1070	4	63	51	27	11
D. of Col.	37	1	95	6	682	49		50		65	6	39	752	3	30	15	29	6
Totals	2545	184	5936	706	45339	4409	81	2686	808	4282	632	3021	39108	190	1620	1464	1285	494
Ala., 1930		3	29	3	576	13		5		19		13	867		11	8	9	4
Ariz., '30	1		30		132	12	1	19		23	5	5	299	1	7	2	8	1
Ark., '30	5	4	49	5	1337	95	1	29		105	26	31	1912	3	24	6	8	11
Calif., '30	83	105	412	97	3208	365	22	349		389	382	155	7498	37	280	147	201	55
Conn., '30	21	21	277	28	696	119	4	136		119	15	119	1464	16	81	65	76	36
Dela., '30	2	2	33	5	152	23		6		4	13	12	293		1	6	10	1
Fla., '30	11	16	48	6	655	59	2	19		34	3	49	1108	6	44	22	20	8
Ga., 1930	5	9	15	2	365	20	2	11		20	5	11	611	1	11	8	6	2
Idaho, '30	1	8	26		221	20		16		19	19	11	371	1	16	6	4	
Ill., 1930	75	34	562	72	3495	411	41	269		346	103	242	7270	50	175	153	280	66
Ind., '30	24	19	141	22	1018	84	10	116		108	31	108	2167	5	62	54	40	11
Iowa, 1930	13	15	90	7	2021	119	3	39		149	79	92	2709	5	66	45	54	9
Kans., '30	4	12	159	7	1903	91	1	46		152	37	112	2671	1	42	63	24	6
La., '30	5	12	50	8	697	34	1	45		58	8	25	1123	4	17	14	13	1
Maine, '30	4	9	66	9	414	61		35		54	22	107	747	3	20	31	13	5
Md., 1930	4	12	123	21	868	79	2	19		36	15	46	1375	8	40	23	39	12
Mass., '30	33	40	339	66	1567	220	7	84		292	56	377	4478	28	104	130	141	42
Mich., '30	9	82	468	58	1586	171	8	84		145	63	244	6570	4	110	117	69	35
Minn., '30	16	33	140	14	1777	158		47		105	46	102	2772	4	95	53	79	26
Mo., 1930	11	35	133	8	1242	91	2	47		125	22	95	1769	8	67	29	35	22
Mont., '30	5		21	3	322	34		21		38	26	28	426	2	14	15	12	2
Neb., 1930	5	3	69	1	1041	84	2	17		86	22	28	1576	1	28	10	14	2
Nev., 1930	8	5	28	1	110	38		12		29	8	12	207	1	3	11	6	3
N. H., '30	10		40	4	221	28		14		21	11	29	473		17	16	7	2
N. J., 1930	65	66	554	65	1543	272	4	118		202	74	199	3731	27	121	111	118	48
N. M., '30			55	2	289	18	1	17		28	5	7	375		8	8	1	
N. C., '30	3	12	69	7	958	92	1	20		66	6	44	1854	2	27	30	6	12
N. D., '30	1	2	12		352	17		10		19	13	6	497		12	4	1	
Ohio, 1930	57	91	387	80	2435	266	10	224		254	101	268	5558	32	176	124	159	53
Okla., '30	6	13	291	15	1973	113	5	62		228	48	47	2742	8	50	27	19	14
Ore., '30	4	34	125	1	607	62	1	55		72	108	63	1256	5	75	42	54	5
Pa., 1930	75	145	651	87	3270	710	7	332		516	174	393	6660	49	331	229	328	93
R. I., '30	7	1	91	9	306	71	1	69		36	8	34	722	6	22	21	21	12
S. C., '30		4	28		524	36		23		18	3	18	895	3	9	7	9	2
S. D., '30	1	3	14		643	29		13		58	40	20	897		14	17	13	2
Utah, '30	5	10	33	3	224	11	3	16		20	21	25	430	5	16	10	2	2
Vt., 1930	4	5	32	1	154	35	2	6		17	5	28	298	1	14	14	14	5
Va., 1930	7	14	111	9	1202	73	1	55		106	22	54	1798	5	31	29	29	6
Wash., '30	20	9	189	10	832	148	4	94		90	120	60	1885	10	53	30	54	8
W. V., '30	9	9	59	7	809	81	1	38		109	25	83	1298	2	71	26	23	5
Wis., '30	18	24	290	24	1781	165	2	109		142	85	144	2794	12	91	81	52	9
D. C., '30	2	18	106	9	396	47		19		29	13	25	1130	6	31	11	30	8
Totals, '30	639	939	6445	776	43922	4675	152	2765	*	4496	1888	3571	85556	362	2485	1855	2101	646

*Not in production.

REGISTRATION STATISTICS, JULY, 1931

Kansas, Louisiana, Maine and Oregon.

Service, Springfield, Ill., and New Jersey, which are furnished by the New Jersey Motor List Co., New Car Division, Trenton, N. J| county, city or town lists, or lists of owners in any given section, may obtain these by addressing any of these three companies

States	Lincoln	Marmon	Nash	Oakland	Oldsmobile	Packard	Peerless	Pierce-Arrow	Plymouth	Pontiac	Reo	Studebaker	Stutz	Whippet	Willys	Willys-Knight	Miscellaneous	Totals
Alabama	1	5	16	3	2	1			49	16	1	21			23	2		1,279
Arizona	1		14	2	12	6			25	4		10			2	1		523
Arkansas	2		23	1	20				87	40	6	15		2	10	2	1	1,804
California	28	28	392	90	227	134	9	33	659	295	40	474		3	245	41	10	12,892
Conn.	6	8	133	33	101	51	1	8	189	177	13	68	1	1	65	10	1	3,357
Delaware	3		10	4	8	5			27	35		9			7	1		472
Florida	1	12	23	7	29	12		1	106	76	6	30			16	2		1,969
Georgia	1	4	25	2	28	5		2	42	38	1	27		1	5	1		1,343
Idaho			14	1	2				27	10	2	13			13	2		482
Illinois	30	21	379	119	362	180	23	24	733	662	20	331	6		266	31	64	13,874
Indiana	5	27	56	24	177	21		4	421	215	10	105	3	2	117	9		4,574
Iowa	6	6	72	21	98	14	1	1	391	211	9	75	1	4	143	15		4,516
Kansas	4	7	55	18	58	13	3	1	166	206	11	68	1	2	77	8		3,566
Louisiana		5	58	2	29	9		4	82	40	3	64			24	3	2	1,884
Maine	2	4	50	14	44	6	1		128	92	2	32	1		32	5		1,414
Maryland	3		62	9	28	22	10	5	149	140	10	69		1	35	6	1	2,674
Mass.	24	15	325	53	271	113	7	28	591	448	23	239			118	35	2	8,982
Michigan	17	19	112	46	342	89	2	12	1921	324	42	89		5	95	10	1	9,161
Minn.	6	6	96	33	159	46	1	13	635	221	14	110		2	160	17	1	4,992
Missouri	11	14	78	30	94	35		11	352	172	8	78	1	3	76	12	3	4,254
Montana	1	6	25	4	19	2		1	60	48	5	26			20	2		1,001
Nebraska	2	4	29	5	52	9	1		194	86	2	57		3	65	7		2,490
Nevada	1	1	7	2	3	4			18	9	3	12			3	1		325
N. Hamp.	3	4	33	10	31	13			79	46	3	19			38	2		1,004
N. Jersey	16	28	322	62	279	144	5	28	366	332	18	228	2	2	107	30	1	7,287
N. Mexico		1	6	3	11				24	12		8			7	1		461
N. Car.	1	3	21	6	38	8		2	199	154	4	30		2	38	1		3,740
N. Dakota	2	1	12	3	6				57	32	5	15		2	15	1		598
Ohio	18	41	274	75	280	111	10	16	1368	459	30	229	4	10	292	72	1	10,543
Oklahoma	4	1	22	11	28	20		6	116	106	1	42		5	15	12	1	2,358
Oregon	7	4	62	11	24	7		7	129	45	6	30			10	4		1,432
Penna.	32	54	504	107	373	174	2	38	1158	523	31	305	2	11	416	63	11	14,231
Rho. Isl.	3	1	62	6	19	10	3	5	110	83	9	39	1		32	5		1,667
S. Ca'lina			12	1	11	8			79	53	1	9		1	9	2		1,657
S. Dak.			11	5	52	2			64	21	1	22		2	17	2		853
Utah		2	18		10	3			20	13	2	8	1		11			561
Vermont			21	6	20	10		1	59	17	1	18	1		29	3		592
Virginia	3	6	45	22	45	15		2	131	161	1	55			36	2		3,762
Wash'ton	5	1	49	14	84	15	1	3	224	101	16	92		1	65	15	1	2,911
W. Va.		4	52	19	33	14			186	112	8	33		3	111	4		2,246
Wisconsin	5	6	293	50	147	41	2	7	339	249	12	132		4	151	11	2	5,206
D. of Col.	2	6	57	10	49	41		4	133	63	1	55		1	18	6	2	2,313
Totals	256	355	3930	944	3705	1413	82	267	11893	6147	381	3391	25	73	3034	459	105	151,250
Ala., 1930	3	2	4		7	7		1	28	9	2	15		5	4			1,647
Ariz., '30	1	1	18	5	17	4	3		15	15		30	1	6	15	11		688
Ark., '30	2	7	31	10	28	4		2	115	50	3	11		8	11	3	1	3,937
Calif., '30	27	82	345	104	197	292	22	47	244	249	47	648	4	29	125	146	35	16,408
Conn., '30	3	27	106	58	93	81	7	19	104	104	25	119	2	10	37	27	12	4,127
Dela., '30		3	2	1	8	7		2	9	23		11		1	6	3		639
Fla., '30	2	11	24	20	16	23		4	37	36	9	25		9	23	6		2,355
Ga., 1930	2	2	17	5	16	11		1	18	11	1	18		5	10	5		1,226
Idaho, '30		1	17	2	8	1			31	14	1	16		11	8	4		853
Ill., 1930	27	73	411	134	359	273	27	30	453	418	59	519	3	69	201	100	83	16,883
Ind., '30	9	47	69	30	117	39	5	5	201	119	10	160	4	22	52	9	4	4,922
Iowa, 1930	4	27	111	28	131	29	1	4	260	155	12	117		63	114	26	4	6,601
Kans., '30	2	10	93	36	106	19	2	6	202	182	9	77	10	47	84	22	1	6,239
La., '30	1	15	61	6	23	7	1	3	48	35	7	39		7	6	4	3	2,381
Maine, '30	2	6	65	20	53	19	5	1	134	82	9	53		17	35	17		2,118
Md., 1930	4	7	55	12	64	42	2	6	122	72	9	80		18	32	7	15	3,269
Mass., '30	18	53	306	60	190	212	31	40	253	220	49	294	3	35	82	90	18	9,958
Mich., '30	12	34	91	52	246	123	4	8	332	161	52	203	1	29	72	23	9	11,275
Minn., '30	11	18	90	50	110	99	1	6	350	165	17	137		85	149	34	3	6,790
Mo., 1930	15	15	93	23	104	65	1	13	170	92	15	107		37	58	11	17	4,577
Mont., '30	1	14	37	12	27	4			60	31	10	29		13	29	14		1,250
Neb., 1930		12	31	12	52	16	1		142	61	2	70	1	41	52	16	1	3,499
Nev., 1930	1	3	9	1	6	8			19	5		16		1	1	3	2	557
N. H., '30	1	7	45	9	28	11	2	1	27	29	10	36		3	20	8	1	1,131
N. J., 1930	15	46	264	73	254	178	22	41	178	200	34	285	4	22	99	73	22	9,128
N. M., '30	1	1	18	2	13	5		1	19	7	1	7		5	8	2		904
N. C., '30	3	6	23	9	21	11			96	63	1	25		22	21	7		3,517
N. D., '30		7	15	6	22	6			48	27	1	21		18	18	5		1,140
Ohio, 1930	21	72	238	101	256	153	33	23	501	305	38	288	7	84	209	132	38	12,774
Okla., '30	2	9	56	22	57	66		12	149	100	6	60	1	42	74	10	4	6,341
Ore., '30	2	22	46	25	55	17		3	83	55	24	73		4	32	23	4	3,037
Pa., 1930	15	97	436	151	463	314	33	51	894	385	55	448	2	85	295	101	40	17,915
R. I., '30	2	4	35	11	19	32	6	12	48	46	13	35	1	4	18	16	3	1,742
S. C., '30		3	14	5	10	6		1	47	22	2	10		2	1			1,702
S. D., '30		7	24	15	74	8		2	97	30	7	37		34	39	3		2,141
Utah, '30		2	30	9	12	14		1	11	16	1	16		2	4			954
Vt., 1930	1	2	19	12	16	6		1	30	17	4	19		11	18	4		795
Va., 1930	3	17	31	27	37	28	6	5	121	110	5	45		28	50	16		4,081
Wash., '30	6	8	75	39	99	28	6	3	159	86	23	119		21	50	38	7	4,383
W. V., '30	2	14	69	43	43	28		3	144	79	7	56	1	43	71	20	1	3,279
Wis., '30	5	22	216	76	161	55	11	9	341	231	15	163	1	58	163	29	6	7,385
D. C., '30	5	11	32	23	63	37	9	3	48	48	7	45		3	7	12	2	2,235
Totals, '30	231	827	3772	1339	3681	2388	241	370	6388	4165	602	4582	46	1059	2403	1080	336	196,783

LUBRICATING THE CHASSIS

(Continued from Page 33)

driving conditions. A simple system of piping receives filtered oil from the automatic pump and distributes it to the metering fittings or "drip plugs," which are located at the bearings. This piping is soft copper tubing, and is firmly fastened to the inside of the chassis side rails, thus being thoroughly protected against damage. It usually extends the full length of the frame on each side in order to reach all bearings, and branches, or tees, are taken off at convenient points to connect with intermediate bearings. The drip plugs, located at the bearings, control the amount of oil delivered to the latter, and are made in different flow ratings to accommodate the requirements of various bearings. These drip plugs are self-contained units of fixed characteristics and maintain their proper rate of flow indefinitely, as they contain no moving parts, and the metering orifices are completely protected against dirt by ample filters.

All the moving parts are contained in the lubricator tank, while the control of oil flow is accomplished at the bearings without the use of any moving parts.

When we think of "chassis lubrication" our thoughts immediately turn to spring bolts, but there are many other bearings of equal or even greater importance, such as front axle king pin and thrust bearings; steering drag link and tie rod ball studs; clutch and brake pedal shaft bearings; clutch thrust bearings; brake mechanism bearings; universal joints; propeller shaft intermediate bearings; isolated bearings on motor, such as fan and water pump.

Many of these bearings are hard to get at and, without a central system, it has been possible to lubricate them only at infrequent intervals, even though owners and designers recognize that constant lubrication is esential if rapid wear is to be prevented.

Even daily lubrication of these points has been impracticable because of the time and expense involved. The best compromise has been lubrication every two weeks or so, and such a schedule becomes a nuisance, as it almost invariably happens that the car is most urgently needed just when it is due for its periodic visit to the greasing station. The net result is usually that chassis lubrication degenerates into a distinctly "hit or miss" system, with dire results to car.

A point of paramont importance in these days is the fact that the owner is vitally interested in protecting his investment and future trade-in value of his car, and efficient chassis lubrication is a big step in this direction.

LOGAN CORP. NAMED FEDERAL DISTRIBUTOR

St. Paul, Minn., Aug. 26.—Appointment of the Logan Corporation, 3338 University Ave., as Northwest distributor of Federal motor trucks, has just been announced by Arthur W. Logan, president of the organization. The firm is also the distributor of the Marmon-Herrington four wheel drive truck.

Officers of the new corporation are, besides Mr. Logan, J. L. Larson, vice-president; A. B. Christopherson, secretary, and George C. May and Frank O. Kuehn, directors.

Mr. Logan organized the Motor Power Equipment Company of St. Paul in 1924, and continued as vice-president and general manager of that company until the formation of the Logan Corporation.

GREAT EASTERN STAGES OPENS NEW BUS TERMINAL

Elizabeth, N. J., Aug. 26.—The Great Eastern Stages and the Coastal Transit Company, which for some time have been operating buses out of Elizabeth for Washington, Boston, Pittsburgh, St. Louis, Chicago and Buffalo, with connections for all points in the United States, has announced the opening of a bus station at 288 North Broad St. These two companies are members of the Short Line system and the name of the new bus station will be the Short Line Bus Depot.

Cumulative New Commercial Car Registration Statistics, July, 1931

Returns for today: Arizona, California, Georgia, Iowa, Kentucky, Louisiana, Maine, Massachusetts, Michigan, Nevada, New Mexico, Oklahoma, Oregon, Pennsylvania and Vermont.

Figures in this table are from R. L. Polk & Co. of Detroit, with the exception of Illinois, which are supplied by the Robinson Advertising Service, Springfield, Ill., and New Jersey, which are furnished by the New Jersey Motor List Co., New Car Division, Trenton, N. J. Some of this data has been published previously, but it is given here complete for the convenience of our subscribers. Reades desiring county, city or town lists, or lists in any given section, may obtain these by addressing any of these three companies.

In this table 41 states and the District of Columbia.

States	Autocar	Brockway-Indiana	Chevrolet	Diamond-T	Dodge	Federal	Ford	G. M. C.	International	La France-Republic	Mack	Pierce-Arrow	Reo	Sterling	Stewart	Studebaker	Whippet	White	Willys	Willys-Knight	Miscellaneous	Totals	States
Alabama			154		4		104	1	5				1			1		1				271	Ala.
Arizona		2	34		4		65		1				1		2	1			2			112	Ariz.
Arkansas		1	177		6		176	2	34				1									397	Ark.
California	7	4	404	8	104	5	1034	48	68	2	10	3	56	8	2	16		9	12		87	1887	Calif.
Connecticut	3	3	148	5	40	8	224	15	33	1	4		31	1	2	3		3	11		3	538	Conn.
Delaware			26		1		31	2	16				4			1						81	Dela.
Florida		1	108	1	4	1	174		5		1		3					2				300	Florida
Georgia		1	88		12		103	2	10				2			1		2				221	Georgia
Idaho			36		5		58		8				1					1			1	110	Idaho
Illinois	1	1	558	35	67	15	630	28	159	1	14		15	5	1	15		14	13	3	50	1625	Illinois
Indiana		8	210	3	33	2	210	27	57		1		12		5	10		2	9		20	609	Indiana
Iowa		1	270	4	16	1	240	10	81				40			16		1	6	1	4	691	Iowa
Kentucky		3	140	3	14	1	132	8	25				5		3	4	1	4	6		1	350	Ky.
Louisiana		1	201	6	25		214	5	62				1				1	3	1		1	521	La.
Maine			120	4	36		145	5	18		8		11			8		1	6		1	363	Maine
Maryland	6	2	135	10	19	5	190	16	40	1	6	1	16		1	2		6	2		15	473	Md.
Mass'setts	25	4	230	3	43	7	528	64	51	9	13	2	30	13	4	11		17	7		12	1073	Mass.
Michigan	3		239		31	6	429	39	36	7			37		1	8	1	2	5		11	855	Mich.
Minnesota			258	9	36	1	269	16	76	5	6		23	1		5		3	9		4	721	Minn.
Missouri	2	1	268	4	18	3	310	21	60		7		12	8	2	6		5	7		11	745	Missouri
Montana			59	2	3	2	117	4	20				3			4		1			6	226	Mont.
Nebraska			148	2	16	4	160	5	56		2		7			5	1		7		2	415	Neb.
Nevada	2		15		4		36	9	5		1					1		1	1		1	76	Nevada
New Hamp		3	42	1	2	1	117	3	3		3		4		1	1		1				182	N Hamp
New Jersey	6	6	254	39	44	6	408	35	60	1	15	1	35	2	7	7		16	4		19	965	N. J.
New Mexico			74	4	3		68	1	18				1			1		1	1		2	174	N. Mex.
North Car.			358	4	33	2	387	10	38	2	2		5			1		4	5		8	859	No. Car.
No. Dakota			23	2	3		29	2	23				1			3				1		87	No. D.
Ohio	6	4	401	4	64	6	600	31	89	7	8		41	1	7	18		20	21		50	1378	Ohio
Oklahoma			236		26	3	212	11	39				4			2		1	1		3	538	Okla.
Oregon			90	1	8	6	204	3	29	2	2		6	1		2		5	2	1	18	380	Ore.
Pennsylvania	21	12	439	18	135	11	684	41	112	7	51	1	39	4	23	20	2	13	36		21	1690	Penn.
Rhode Island	2		44		11	5	98	14	10		3		9	1	1	3					2	203	R'de Isl.
So. Carolina			153		6	1	122	7	23		1		1			1		1				316	S. Caro.
South Dakota			25	5	8		39	1	19				1			16			1		1	116	S. D.
Utah			39		7		48	3	8		1		4			2		1			1	114	Utah
Vermont			23		6		54	1	17				5			1			4			111	Vermo't
Virginia	1	2	232	4	19	4	272	16	34	1	3		4			3		6	1		4	606	Va.
Washington			175	3	20	1	309	19	44		4		17	1		12		7	8	1	23	644	Wash.
West Virginia			117	2	14		168	12	39	1			12	1		5			11		9	391	W. Va.
Wisconsin			571	41	57	9	487	30	140	4	7	1	24	9	5	23	2	3	48		25	1486	Wis.
Dist. of Col.	2		43	6	2	1	100	14	7			1						3				179	D. C.
Totals	87	60	7365	233	1014	117	9985	581	1678	51	173	10	525	56	67	239	8	160	247	7	416	23079	Totals
Ala., 1930			136		1	1	178	5	4		2	1	3					2	1			334	Ala., 1930
Ariz., '30			26		7		86	2	3		1		1		4	2		1			1	134	Ariz., '30
Ark., 1930		2	236		4		310	6	38		1		1				2	6			2	608	Ark., 1930
Calif., 1930	14	4	526	7	94	12	1387	77	55	3	18		77	23	6	12	3	37	3	2	114	2474	Cal., 1930
Conn., 1930	2	9	109	7	32	5	216	16	21		20		18	2	14	4		3	1	1	16	496	Conn., '30
Dela., 1930	1	2	32		2		56	7	6				1		1		1	1	1			111	Del., 1930
Fla., 1930		7	99		3		233	2	19		3		3					5	2		2	378	Fla., 1930
Georgia 1930	1	11	65		4	6	136	3	11		2		2				1	2	2	1		247	Ga., 1930
Idaho, '30			52		8		92	13	12	1			4					1	1	2	3	189	Idaho, '30
Ill., 1930	5	16	516	41	50	14	874	34	110	2	17		19	8	1		8	21	21		64	1821	Ill., 1930
Indiana, '30		11	132	2	12	2	335	19	59				6		12	3	3		2	1	7	605	Ind., 1930
Iowa, 1930		1	283	9	22	1	368	13	108		5		16			1	1	1	9	2	4	844	Iowa, '30
Kentucky, '30		4	124	3	9	2	224	8	46		5		12				3	4	2		7	453	Ky., 1930
La., 1930			135		4		220	6	18		2		2					6			8	401	La., 1930
Maine, 1930	1		138		16		245	7	31		5		8				3		4			458	Me., 1930
Maryland, '30	5	8	105	11	6	1	244	5	22	2	20		4	2	6	2		16	1	1	8	469	Md., 1930
Mass'setts, '30	20	24	219	17	62	7	674	35	43	2	47		34	20	5	2	3	23	2	2	25	1266	Mass., '30
Michigan, '30	1		213	4	19	18	725	22	48	4	5		19	3	3	1	4	6	8	2	23	1128	Mich., '30
Minn., 1930		3	255	11	22	4	502	21	94		2		18			1	5	2	21		21	982	Minn., '30
Missouri, '30	5	8	269	9	25	4	358	14	70		13		8	2	1	1	5	2	3		25	822	Mo., 1930
Montana, '30			68		3	1	123	3	33				5				2	1	1		3	243	Mont., '30
Neb., 1930			275	3	15	1	367	7	87		2		4			1		2	9	1	11	785	Neb., '30
Nevada, 1930			17		8		46	2	3				2			1	1	1			3	84	Nev., 1930
N. Hamp., '30		1	39	5	6		121	4	5	1	7		5		1	1		1	1		4	202	N. H., '30
N. J., 1930	14	30	265	13	42	7	616	37	34	2	27		18	4	13	4	2	29		2	42	1201	N. J., '30
N. Mexico, '30		9	108		4		116	2	8				2					3	2		4	258	N. M., '30
No. Car., '30	1		224	1	11	3	364	4	14		2		2				1	2	6		9	644	N. C., '30
N. Dak'a, '30			50	3	2		74	1	46				5						2		3	186	N. D., '30
Ohio, '30	14	13	345	10	59	9	901	42	121	1	12		22	1	11	4	9	55	15	2	70	1716	Ohio, '30
Okla., 1930	1	5	368		25	13	471	21	71		12		5			2	3	8	10		11	1026	Okla., '30
Oregon, 1930	4		117		14	11	417	15	38	3	17		7	4		3		14	2	2	33	701	Ore., '30
Pen'vania '30	29	23	413	8	102	14	1088	36	129	6	63		39	5	32	7	16	31	4	5	58	2108	Pa., 1930
Rhode Isl., '30	3	3	41	2	4	1	124	9	5		1		3	1	1	1		2			2	203	R. I., '30
S. C., 1930		1	125			2	171	3	10									1			12	325	S. C., '30
S. D., 1930		3	71	6	7		126	3	50				5				2		5		3	281	S. D., 1930
Utah, 1930			48		4		127	4	6		1		1								5	196	Utah, '30
Vermont, '30		1	29		6		73	2	42		1		6		2			1		1		164	Vt., 1930
Va., 1930	2	2	239		4	9	333	11	17	5	5				1		2	6	5		25	666	Va., 1930
Wash., 1930			203		13		443	33	45		7		13	2		2		20	4		45	830	Wash., '30
W. Va., 1930		6	144	3	17	2	202	17	42	1			8			2		2	4		14	464	W. V., '30
Wis., 1930		8	564	23	40	11	784	37	125		4		23	4	8	4	9	3	24	1	29	1701	Wis., '30
D. of Col., '30	5		27	3	2		105	6	7				1	1				3			5	165	D. C., '30
Totals	128	215	7450	201	790	161	14655	614	1756	33	329	1	432	82	122	61	89	323	178	28	721	28369	Totals

Progress in Automotive Engineering

(Continued from Page 24)

The possibilities of front drive, as introduced some months ago, are of considerable interest.

Widespread adoption of means for silencing the intake air and the exhaust gases has taken place, and we are now seeing the application of silencing methods to the body and other elements of the car. The use of plastic materials to damp vibrations in body panels and the application of felt and similar materials to dashes, seat pads and floor boards have already accomplished wonders of sound proofing.

Greater ease of steering has been incorporated in cars produced during the past few months, and steering ratios have gone up in some instances to 20:1 to assure ease of handling of the heavier vehicles. Steering gears have shown improvement through the elimination of friction, and kick-back has been largely eliminated through the use of special shackles.

The automobile buying public has continued to demonstrate its desire for the largest package that may be available for a given outlay. We can confidently expect, however, an enhancement along lines of comfort, particularly with respect to riding qualities and ease of control. Heating, cooling and adequate means of ventilation are items that will be heard from in the future.

Engineering advancement in the field of commercial vehicles has followed the line of improved performance through the application of greater engine power. In buses, we find rapid strides in giving the passenger additional comfort.

Accessibility of major units has been materially improved, and manufacturers are working in several directions toward easier and better maintenance.

The increased use of the lighter alloys in chassis and body construction has tended to increase the payload capacity and unsprung weight.

A number of interesting developments in high speed Diesel engines for commercial vehicles are reported to offer considerable promise.

In the field of aviation, there has been comparatively little change during recent months, but we do find a notable increase in engine power per pound of weight, and our engineers have been able to design power plants whose reliability is being demonstrated throughout the entire realm of aircraft operation.

In the transport field, we find that an improvement in aerodynamic efficiency has brought faster ships into being. Wide adoption of the N. A. C. A. cowling, the Townened ring and comparable devices has accounted for a noteworthy improvement in anti-drag characteristics. Better and more complete streamlining has also resulted advantageously.

Brakes have become more universal in their adoption, and we find low pressure tires, so-called air wheels, used on many ships. This type of tire has made it possible in some cases to eliminate shock absorbers and has relieved landing gear stresses to a point where designs have been changed.

Metal propellers are being used in a majority of aircraft types and, of these, at least two types of variable pitch propeller have been introduced.

At present we find a considerable amount of effort being devoted to popularizing the light airplane, powered with less than 50 h. p., for private ownership at low cost. The two-stroke cycle engine has been found to offer advantages in this field from the standpoint of low cost and light weight.

With particular reference to the elimination of fire hazard and an improvement in specific fuel consumption, the Diesel engine has found strong advocates.

The autogiro has attracted a very wide interest among manufacturers and the public alike. Performance possibilities of this type of craft and others that have been designed with the same objectives in view are not to be overlooked.

Col. Clarence M. Young, assistant secretary of commerce in charge of aeronautics, summarizes the trends that have been gathered from Department of Commerce statistics, over a period from 1927 to 1930, as follows:

1. Speed and landing speed have gradually increased. A 10 per cent. average gain in speed has been noted over this period.
2. There has been a decrease in average pay-load carried, in comparison with horse power and gross weight.
3. Power loading has decreased, wing loading has increased, wing area remaining about the same.
4. Radial air-cooled engines are in the lead, with in-line air-cooled and V-type air-cooled engines following in the order named.
5. Eighty-seven per cent. of the approved type certificates of the Department of Commerce have been for land planes, 7 per cent. for seaplanes and 4 per cent. for amphibians.

The recent christening of the U. S. S. Akron has stirred up a renewed interest in lighter-than-air craft, and the performance of this wonderful ship will be watched with a high degree of interest. The benefits to be derived from its behavior will be readily applicable to the design of commercial ships.

Future developments in the aircraft industry can be expected to improve the elements of reliability and safety. Freedom from noise, smoother operation, heating and ventilating and other factors of passenger comfort must receive increased notice.

Methods of production, maintenance and operation in all lines of automotive transportation have shown steady improvement, and the technical man in every automotive field of endeavor has consistently adapted himself to the unusual requirements of the sub-normal period through which the world has been passing.

STEWART CHEVROLET CO. REMODELING QUARTERS

Bloomfield, N. J., Aug. 26.—Under the direction of James M. Stewart, president of the Stewart Chevrolet Company of 398 Bloomfield Ave., alterations have been started at the company's new location at 619-21 Bloomfield Ave. Mr. Stewart, according to his plans, will have unusual show rooms for the display of cars. Outdoor rustic effects are being built, with special color effects to harmonize. The opening of the show room will be on September 1.

STANDARD OIL TO EXPEND $300,000 IN DUNKIRK, N. Y.

Dunkirk, N. Y., Aug. 26.—The Standard Oil Company of New York has completed negotiations for acquisition of the wharf and adjoining property of the Erie Railroad on the south shore of Lake Erie, this city, upon which it is planned to erect immediately a $300,000 bulk distributing plant.

Plans provide for making this city the center of distribution for a greater portion of western New York state. The company will receive its products here by lake tankers and distribute throughout the area by rail and motor truck.

It is planned to begin construction work on the new project this fall.

WATERLOO, IA., DEALERS HEAR C. H. THOMPSON

Waterloo, Ia., Aug. 26.—Advertising was the principal feature to come before a meeting of twenty-five automobile dealers and their staffs in Hotel President. "Honesty in Advertising" was the subject of C. H. Thompson, Baltimore, Md., sales counselor of the Commercial Credit Company.

High lights of his remarks had to do with honesty. "When advertising becomes strictly honest it will regain its punch," he said, "especially in the case of used cars." Auto firm representatives who heard Mr. Thompson included the Schierbrock-Waterloo Company, Warren Motor Company, Hudson-Essex Waterloo Company, Chevrolet Sales and Service Company and Frank Collord's.

A. E. R. A. ISSUES

Sept. 26, 28, 29, 30, October 1, 2 and 8

On the occasion of the A. E. R. A. Convention and Exhibit to be held in Atlantic City, Automotive Daily News will distribute copies to those in attendance and will also mail copies daily to bus operators, truck fleet owners and truck dealers throughout the country. The convention will be covered daily by our own reporters so that all the news of the A. E. R. A. will be in the hands of the trade as quickly as possible.

Manufacturers of trucks, buses, vehicle equipment, shop equipment, etc., should find the added distribution very profitable.

Regular rates apply.

AUTOMOTIVE DAILY NEWS

350 Hudson St. New York

THE NEW NASH has the SELLING FEATURES American Motorists Demand

NAME the leading motoring advancements of the day—and you list the major selling features of the New Nash line. The Nash dealer is not "stopped" by a prospect's demand for this feature or that feature—*because Nash has them all.* And, more important, he is in the position to prove what he says by the most impressive and convincing demonstration in the Nash field. Certainly, it is easier for the aggressive dealer to *sell*—than to sell *against*—the *only* car that has *all three of the greatest selling features* brought out in the past several years. THAT CAR IS NASH.

THE THREE IMPORTANT NEW SELLING FEATURES ARE:—

SYNCHRO-SHIFT FREE WHEELING

SYNCHRO-SHIFT TRANSMISSION PLUS SILENT SECOND

SOUND-PROOFED BODY AND CHASSIS

These features are in demand. They make sales.

In addition, there are, of course, a multiplicity of selling advantages of long established power, including such features as 9- and 7-Bearing Crankshafts—Bijur Automatic Chassis Lubrication—Twin Ignition—Twin Carburetion—Dual Manifolding—Aluminum Alloy Pistons. Get the facts about the liberal Nash franchise. Write:

THE NASH MOTORS CO.

Kenosha, Wisconsin

(N575)

New Diamond T 2-Tonner Incorporates New Designs

(Continued from Page 1)

motor for inspection or repair, it is claimed.

Seven main bearings with a total length of 10⅜ inches support the heavy 2½-inch crank shaft, providing a total main bearing area of 85 square inches. Force-feed lubrication is employed to main and connecting rod bearings, with all passages drilled in the block. Water jackets extend the full length of the cylinders and completely surround the exhaust valves, to provide ample cooling capacity for continuous high-speed performance at full load. Cam shaft, water pump and accessory shafts are all gear-driven. The fan is belt-driven.

Light weight pistons carry four rings each and one-inch diameter piston pins, which are locked in the rod. Water pump is said to be unusually large and of the modern high velocity type. It is located at the left side of the motor and advantage has been taken of the four gear front end design to make it possible to remove the entire pump for servicing without affecting any other part of the engine. Combustion chamber is of the modified high-turbulence design with moderate compression ratio.

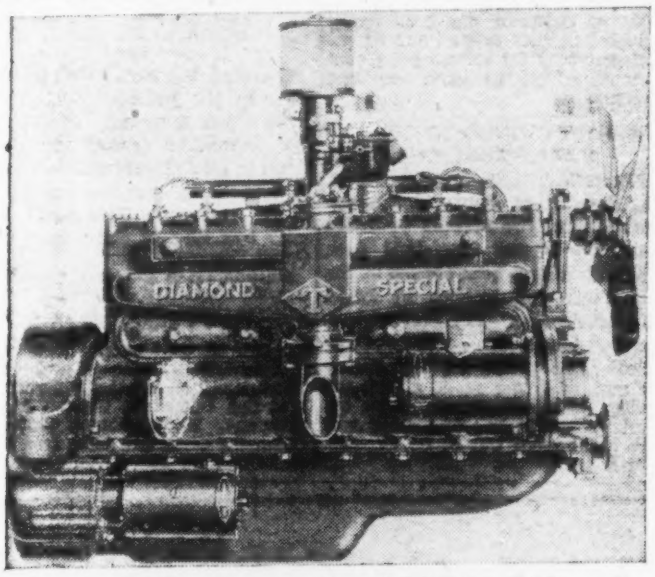
The carburetor is a 1¼-inch heavy duty Zenith of the down-draft type, and air cleaner is supplied as standard equipment. A mechanical fuel pump, driven from the camshaft, is used.

The dry plate clutch is eleven inches in diameter and is faced with molded asbestos. A ball throw-out bearing is used. The design of this clutch provides for adjustments being made from the outside without the necessity of exposing any part of the clutch mechanism.

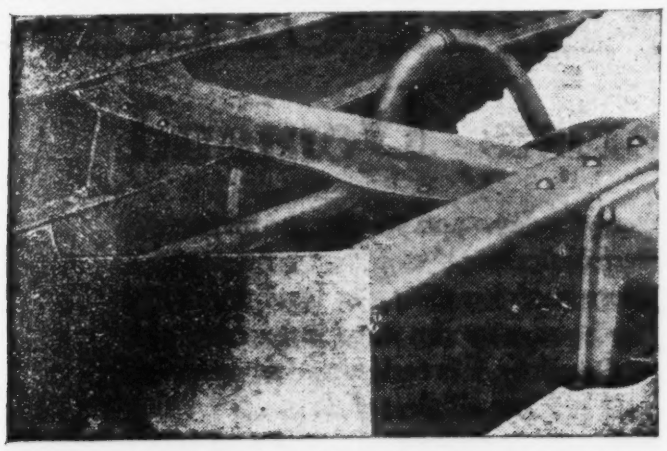
The transmission is compact, with short, heavy shafts carried on ball and roller bearings. It provides four forward speeds and reverse, and is designed with special full involute teeth on the constant mesh and third speed gears. Spicer universal joints and two-piece propeller shaft are employed, with intermediate support provided by a self-adjusting ball bearing.

The rear axle is of the full floating type. Double Timken bearings at each rear wheel carry the entire load directly to the alloy sleeve extension of the one-piece cast steel housing. The differential gears are also carried on Timken bearings, and the pinion is straddle mounted on three rows of bearings.

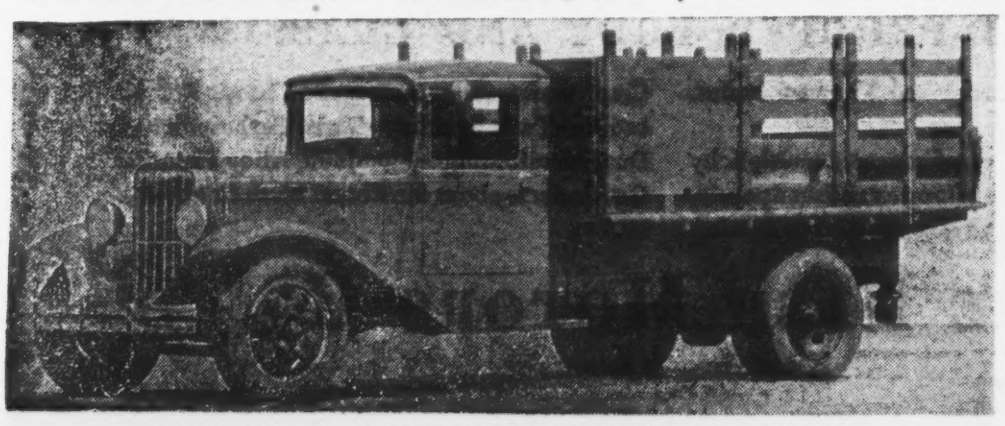
(Continued on Page 39)



ENGINE used in new Diamond T two-ton model



FRAME construction employs "alligator jaw" type cross members on new Diamond T



NEW Diamond T two-ton chassis with de luxe cab and removable stake body

SAFETY GLASS

(Continued from Page 24)

cars had been equipped during that year.

Looking at the matter from the viewpoint of manufacturing number, it is found that in 1927 only one manufacturer was installing safety glass as standard equipment. A survey made in December, 1930, showed that seventeen well-known makes of passenger cars were in the safety glass list, and after the list was compiled still another prominent producing company announced that safety glass would be used as optional equipment in its two lines in 1931. In April of 1931 one of the largest manufacturers who had previously offered safety glass as standard equipment in windshields only, made the spectacular announcement that complete safety glass equipment could be had for an additional charge of $20 in the sedans and $15 in the coupes. It may be safely predicted that practically all of the cars to be exhibited at the 1932 New York and Chicago shows will have safety glass equipment.

Adoption of safety glass by automobile manufacturers is following lines familiar to students of automobile history, but its rate of gain is faster than was the case in past automotive advancements.

Its general use is the outcome of public demand, first recognized and then answered by the manufacturers. Four wheel brakes became standard equipment in this way. So did shock absorbers, bumpers and other safety devices adopted in automobile production.

The public is demanding safety glass more and more as it becomes increasingly conscious of the grave perils from flying glass in every automobile accident. Its saving of life and its protection from personal injury make its use good business policy for every producer, and it is safe to predict that in a short time it will be as universally used as windshields, lamps, four wheel brakes, balloon tires and other common automobile parts that were all classed as accessories and optional equipment in their time.

In addition to its use in passenger automobiles, safety glass is being found more and more commonly in buses and coaches, and in some states legislatures are already requiring its installation in taxicabs. Many truck makers are including it in their specifications. It is now evident that the day is not far off when all vehicles employed in transporting human beings, including street cars, airplanes and even railway coaches, will be protected from the dangers of flying glass by the installation of safety glass in every window and windshield.

MONROE EQUIPMENT REPORTS GROWING SALES

Monroe, Mich., Aug. 26.—C. S. McIntyre, president of the Monroe Auto Equipment Company of this city, today announced that business prospects with his company are on the upgrade.

Jobbing sales have shown about 20 per cent. increase this month. Standard equipment sales are holding about the same as last month. Labor conditions, Mr. McIntyre says, are very good, with unemployment in Monroe less than 10 per cent. of the labor supply.

Bendix Gives Details Of New Clutch Control

(Continued from Page 32)

made by the Bragg-Kliesrath Corporation, a Bendix subsidiary, and it is now standard equipment on many makes and types of motor vehicles.

Bendix clutch control automatically disengages the clutch the moment the foot is lifted from the accelerator. When the engine reaches idling speed, which is almost instantly, gears can be shifted, and when the accelerator is depressed again the clutch is automatically engaged. Another feature claimed for this new Bendix product is that it provides the sensation and all the advantages of free wheeling without the necessity of manual clutch operation.

The device utilizes vacuum from the intake manifold and operates in all gears, forward and reverse. A vacuum is created and maintained from the moment the engine reaches idling speed—that gap between closed throttle position and the point where the foot accelerator starts down.

It operates entirely by action of the accelerator and results from a perfectly natural movement on the part of the driver. It has always been the practice to lift the foot from the accelerator when the objective is to shift gears or stop. With the Bendix clutch control, this movement automatically disengages the clutch.

Elimination of fatigue from constant clutch operation with the foot will be stressed as one of the principal selling points, particularly with woman drivers; likewise, the fact that the new product will result in longer clutch life, because it instantly and mechanically operates the clutch, eliminating the driver's tendency to "ride" the clutch pedal. It also pointed out that clutch control should end the timid driver's inherent fear of shifting gears in traffic because the timing is mechanically perfect.

All free-wheeling advantages are accomplished by the new Bendix product, it is pointed out, without the leg work of clutch pushing. At the same time the free-wheeling feature incorporated in clutch control is entirely optional with the driver.

Another advantage cited is that when the driver lifts his foot from the accelerator the vehicle coasts

(Continued on Page 39)

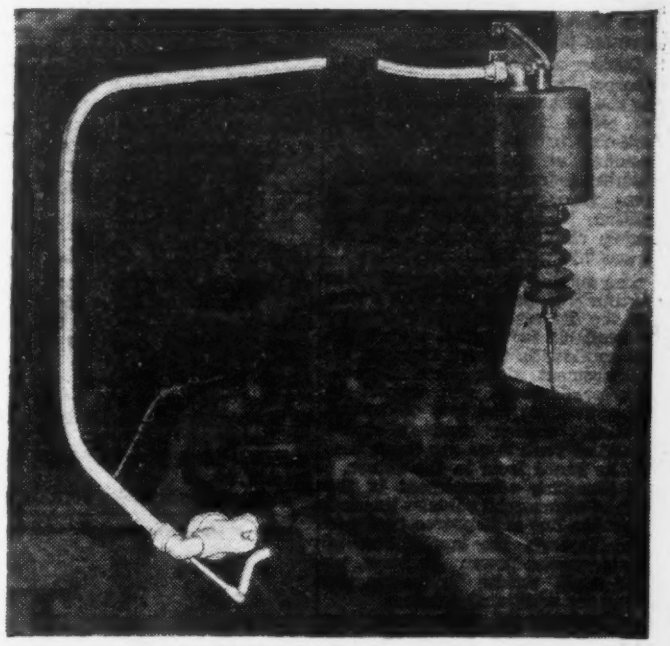


FIG. 2—Clutch control installation on a Ford, showing valve connected to manifold with tube leading to vacuum cylinder

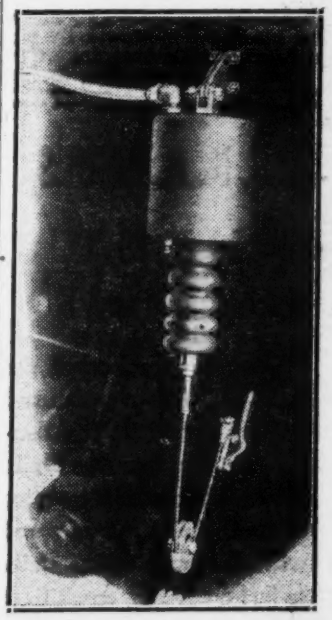


FIG. 3—Close-up of vacuum cylinder, showing cable attachment to clutch pedal on a Ford. The principle is the same for all makes and models of automobiles, trucks and buses, although integral parts are necessarily in different positions

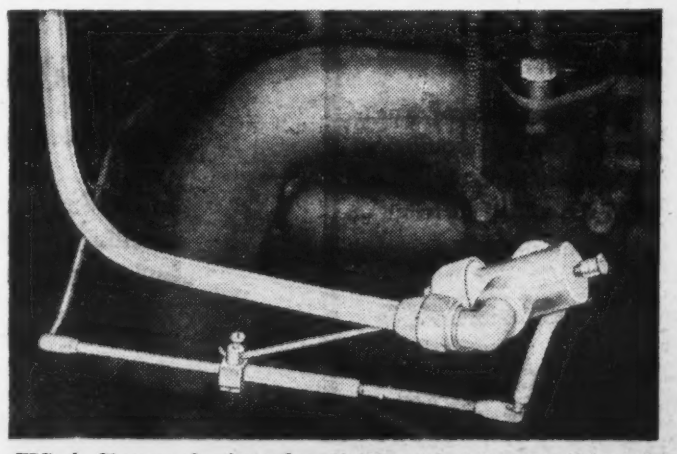


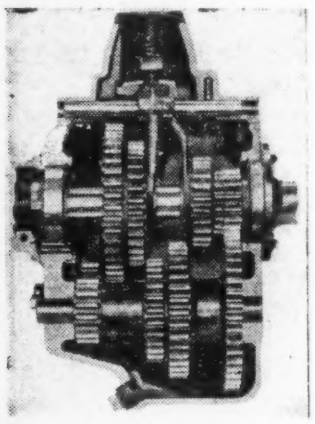
FIG. 4—Close-up showing valve attachment to intake manifold and connection to the accelerator on a Ford

UNIQUE DESIGNS FEATURED IN NEW DIAMOND T MODEL

(Continued From Page 38)

Lockheed hydraulic four wheel brakes have front drums sixteen inches in diameter by 2¼ inches in width. Rear drums are sixteen inches in diameter by 3½ inches in width. Rear drums are cast of alloy iron. A special slow wearing, molded lining is used which is claimed to be unaffected by extremes of temperature or weather conditions. The brake lining area is 350 square inches. The master cylinder is of a new type, incorporating the automatic supply tank in a single unit, with a convenient opening under the hood for replenishment when required. Hand brake is a contracting band mounted at the rear of the transmission.

Front axle is of conventional design, with extra large kingpins and



THE COMPACT transmission on new Diamond T features short, thick shafts, with involute gears for constant mesh and third speed

special provision for the torsional rigidity required with four wheel brakes.

Cam and lever steering is employed with extra long front springs carried in "compression" type rubber bushings and shackled in front. No lubrication is required with these shackles, nor can they loosen up as a result of wear, all relative movement being absorbed by flow of the compressed rubber, it is claimed.

The tapering pressed steel frame employs special cross members of the alligator jaw type. Depth is 7 inches at point of greatest stress, flanges are 3 inches wide and thickness of stock 7-32 inch. The front cross member and motor support is of a new type and is said to provide unusual stiffness at this point.

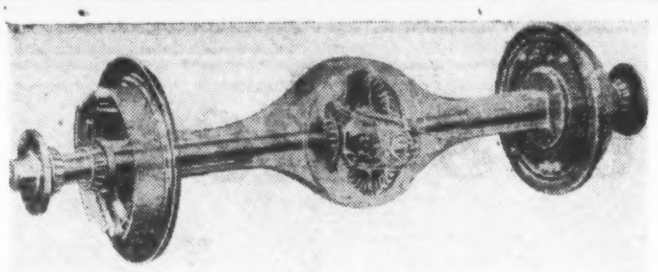
Rear springs are 53 inches in length and 2½ inches in width and

FRONT springs are fore-shackled on new Diamond T

have twelve leaves of heat-treated alloy steel. A six-leaf helper spring provides additional capacity and stability for heavy loads.

Hollow spoke metal wheels are standard equipment, and tires are 6.50x20-inch balloons with duals rear. Spare rim and tire carrier are also supplied.

Radiator is of the high efficiency, heavy duty type, employing the flat tube and fin construction with a high percentage of copper. The



DIAMOND T two-ton model features full floating axle, with wheels, differential carrier and pinion mounted on roller bearings

pressed steel shell is finished in polished chromium plate, and protection for the core is supplied by a guard of heavy chromium-plated bars.

Equipment includes steel cowl, front fenders and running boards, electric head and tail lights, speedometer, heat indicator, battery, generator, starter, oil gauge, horn, jack and tools. Speedometer and gauges are of the airplane type for easy visibility and are mounted in a new instrument panel of extremely attractive appearance.

A special de luxe all-weather steel cab is offered for this model, which has been designed with particular attention to driving comfort and convenience. Seat cushions are said to be deep and comfortable, and a special rubber mat replaces the common type of wooden floor. Accelerator pedal is of a new and more comfortable design, and the entire cab is flexibly mounted to secure freedom from vibration. Cowl and cab treatment has been carefully worked out to provide a harmonious streamline appearance, and a special two-color paint treatment is available at nominal extra cost.

The standard wheel base is 155 inches to accommodate bodies to 11 feet in length. A special long wheel base of 167 inches allows for the use of 13-foot bodies, when required, and a 137-inch wheel base is supplied for dump bodies and tractor-trailer service.

NEW BENDIX CLUTCH CONTROL DETAILS

(Continued From Page 38)

with a minimum fuel consumption and wear on parts. In the event that the motor stalls the vacuum is dissipated instantly, the clutch is automatically engaged, and the car's momentum cranks the engine quietly and at once without the least move on the driver's part.

An important safety feature has been provided by making Bendix clutch control entirely selective and optional.

The motorist can return to conventional drive merely by moving the hand throttle to that point where it starts to push the foot throttle down. When that is done, it is necessary to use the left foot to operate the clutch in the usual manner.

Clutch control equipment will be sold in every price class, ranging upward from $19.50 for Fords and Chevrolets.

DEALERS HOLD SESSION

Long Branch, N. J., Aug. 26.—Members of the Monmouth County Auto Dealers' Association met at the Garfield-Grant Hotel for their monthly session. Routine business occupied a short session.

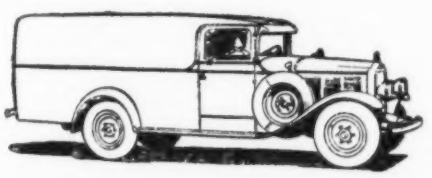
STANDARD OIL PLANNING NEW BULK STATION

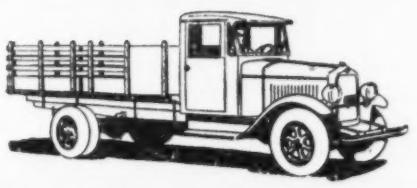
Trenton, N. J., Aug. 26.—By the terms of a realty transfer just completed the Standard Oil Company of New Jersey has purchased eleven acres of land in East Burlington, on the Delaware River front. The consideration was not disclosed.

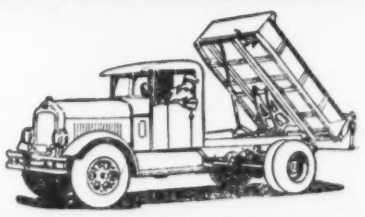
The property purchased adjoins that of the United States Cast Iron Pipe and Foundry, with 300 feet on the River Road, with wharf rights, extending to the property of the Pennsylvania Railroad Company. The purchasers acquired the property for the loading and unloading of ocean-going oil and gasoline barges, and will take the place of the present West Burlington plant, which site has been sold to the Public Service Corporation for the enlargement of its power plant. Plans include the erection of storage tanks, business offices and other buildings.

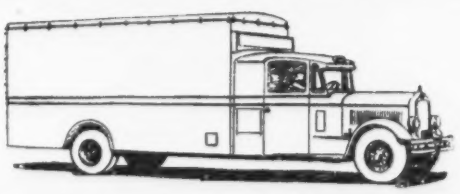
MAYBERG APPOINTED

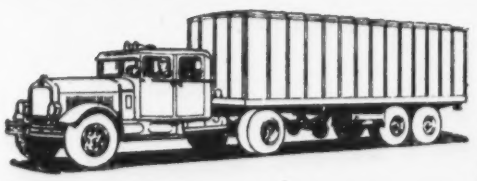
Minneapolis, Minn., Aug. 26.—Marc N. Mayberg has been appointed manager of the Minnetapolis branch of the Pennzoil Company of Oil City, Pa., succeeding A. C. Barnard, who has been transferred to the Chicago office of the company.

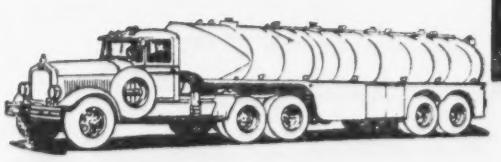

RETAIL DELIVERY


FAST EXPRESS


HEAVY-DUTY DUMP


CITY OR INTER-CITY VAN


HIGHWAY FREIGHT


TRACTOR TRAILER

LIFT THE SMOKE SCREEN *from* truck ratings

There is no sound reason for the confusion that exists in truck ratings. The truck buyer is entitled to an accurate measure of value that definitely establishes the real capacity of the truck he buys. You can't make a heavyweight out of a lightweight by increasing his hat size, nor can you make a 3-ton truck out of a 2-ton truck by throwing a "smoke screen" around its true carrying capacity.

Two trucks may appear to be almost identical, but if one has quality steel, adequately heat-treated . . . engineered to accurate specifications . . . has the proper balance of weight and strength—it will carry a capacity load farther, last longer and earn more money than the truck that does not have these qualities.

White truck ratings are based upon the proven experience of thirty-one years of designing and building long-life, economical transportation units. No misplaced enthusiasm or optimism decides White truck ratings—grueling road tests, engineering knowledge, White's broad transportation experience in serving operators in every field of business all over the world provide the yardstick of real capacity.

A White Truck can and will carry as heavy a load as any truck on the market—yet every model is conservatively rated to protect your truck investment. With nominal gross weight ratings ranging from 8,000 to 40,000 pounds—including the six-wheelers—White sells only on a sound basis—a truck for every job and the right capacity for each truck. A White Truck gives you the greatest value, because it is a real truck from radiator to rear axle, assuring you of the lowest-cost operation over a long period of time.

White

A COMPLETE LINE OF TRUCKS AND BUSSES

THE WHITE COMPANY . . . *Cleveland*

—Something That Will Sell—

Attention Jobbers and Truck Owners! Villard Truck Semaphore Signal and red rear Motor Vehicle Reflectors provide greater safety for commercial vehicles. Used wherever dependability counts. Legal everywhere.

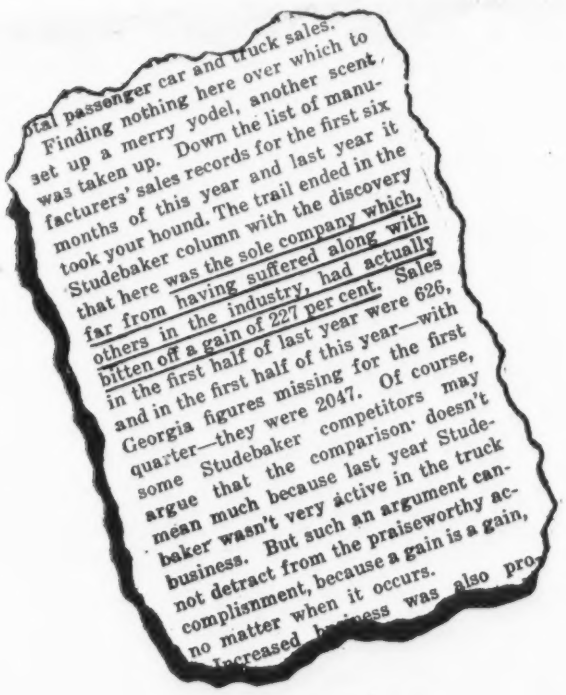
Write today for prices, descriptive booklet and sample. Very attractive discounts.

VILLARD SIGNAL MFG. CO.
ROCHESTER, N. Y.

10 to 23 years these 379 dealers have been

marching on with Studebaker

"Studebaker truck business is a substantial 'back log' for any automotive dealer, as evidenced by this clipping reproduced from page 48 of the August Commercial Car Journal."



tal passenger car and truck sales.
Finding nothing here over which to set up a merry yodel, another scent was taken up. Down the list of manufacturers' sales records for the first six months of this year and last year it took your hound. The trail ended in the Studebaker column with the discovery that here was the sole company which, far from having suffered along with others in the industry, had actually bitten off a gain of 227 per cent. Sales in the first half of last year were 626, and in the first half of this year—with Georgia figures missing for the first quarter—they were 2047. Of course, some Studebaker competitors may argue that the comparison doesn't mean much because last year Studebaker wasn't very active in the truck business. But such an argument cannot detract from the praiseworthy accomplishment, because a gain is a gain, no matter when it occurs.
Increased business was also pro-

FOR 10 years and more, 379 distributors and dealers have been on the Studebaker band wagon. For 15 years or more, 196. For 20 years or more, 45.

They've been doing business in poor years as well as good years because Studebaker consistently has been giving them readily salable merchandise.

Today, Studebaker's four great Free Wheeling cars, serving the needs of four great price fields, continue to set the profit pace for the industry. Sixteen other makes have adopted or adapted Free Wheeling, originated by Studebaker. If you want to move up with the real money-makers, get the details of the equitable Studebaker contract from one of the most successful dealers in America—Paul G. Hoffman, Vice-President in charge of Studebaker Sales.

STUDEBAKER—America's Friendliest Factory